**Florida Supplement to the 2012 IBC**

***Chapters 1-35***

**ICC EDIT VERSION**

**Note 1**: Throughout the document, change International Building Code to Florida Building Code, Building; change electrical code references to Chapter 27 of the 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 Fifth edition (2014) of the *Florida Building Code* include: the International Building Code®, 2012 edition; the International Plumbing Code®, 2012 edition; the International Mechanical Code®, 2012 edition; the International Fuel Gas Code®, 2012 edition; the International Residential Code®, 2012 edition; the International Existing Building Code®, 2012 edition; the International Energy Conservation Code, 2012; the National Electrical Code, 2011 edition; substantive criteria from the American Society of Heating, Refrigerating and Air-conditioning Engineers’ (ASHRAE) Standard 90.1-2010. 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 and 2 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 2012 edition of the International Building Code.~~ **[Delete table]**

Dotted vertical lines in the margins within the body of the supplement indicate a change from the requirements of the base codes to the 2014 *Florida Building Code* effective December 31, 2014.

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**

***Section 101 – General. Change Section 101 to read as follows:***

**101.1 Title.** These regulations shall be known as the *Florida Building Code*, hereinafter referred to as “this code.”

**101.2 Scope.** (No Change)

**Exceptions:**

1.  Detached one- and two-family dwellings and multiple single-family *dwellings* ~~and multiple single-family~~ *~~dwellings~~*(town houses) not more than three stories above *grade plane* in height with a separate *means of egress* and their accessory structures shall comply with the *~~International Residential Code~~* *Florida Building Code, Residential.*

2.  Existing buildings undergoing repair, alterations or additions and change of occupancy shall comply with Chapter 34 of this code.

**101.2.1 Appendices.** (No Change)

**101.3 Intent.** (No Change)

**101.4 Referenced codes.** The other codes listed in Sections 101.4.1 through 101.4.~~6~~ 8 and referenced elsewhere in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference.

**101.4.1-101.4.3** (No Change)

**101.4.4 Property maintenance.** ~~The provisions of the~~ *~~International Property Maintenance Code~~* ~~shall apply to existing structures and premises; equipment and facilities; light, ventilation, space heating, sanitation, life and fire safety hazards; responsibilities of owners, operators and occupants; and occupancy of existing premises and structures.~~ Reserved.

**101.4.5 Fire prevention**. ~~The provisions of the~~ *~~International Fire Code~~* For provisions related to fire prevention, refer to the *Florida Fire Prevention Code*. The *Florida Fire Prevention Code* shall apply to matters affecting or relating to structures, processes and premises from the hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices; from conditions hazardous to life, property or public welfare in the occupancy of structures or premises; and from the construction, extension, *repair, alteration* or removal of fire suppression, *~~automatic sprinkler systems~~* and alarm systems or fire hazards in the structure or on the premises from occupancy or operation.

**101.4.6** (No Change)

**101.4.7 Accessibility.** For provisions related to accessibility, refer to the *Florida Building Code, Accessibility.*

**101.4.8 Manufactured buildings.** For additional administrative and special code requirements, see section 458, *Florida Building Code, Building*, and Rule 61-41 F.A.C.

***Section 102 – Applicability. Add Section 102.1.1 to read as follows:***

**102.1.1** The *Florida Building Code* does not apply to, and no code enforcement action shall be brought with respect to, zoning requirements, land use requirements and owner specifications or programmatic requirements which do not pertain to and govern the design, construction, erection, alteration, modification, repair or demolition of public or private buildings, structures or facilities or to programmatic requirements that do not pertain to enforcement of the *Florida Building Code*. Additionally, a local code enforcement agency may not administer or enforce the *Florida Building Code, Building* to prevent the siting of any publicly owned facility, including, but not limited to, correctional facilities, juvenile justice facilities, or state universities, community colleges, or public education facilities, as provided by law.

***Change Section 102.1 to read as shown:***

**102.2 ~~Other Laws.~~** **Building.** ~~The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.~~ The provisions of the *Florida Building Code* shall apply to the construction, erection, alteration, modification, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every public and private building, structure or facility or floating residential structure, or any appurtenances connected or attached to such buildings, structures or facilities. Additions, alterations, repairs and changes of use or occupancy group in all buildings and structures shall comply with the provisions provided in Chapter 34 of this code. The following buildings, structures and facilities are exempt from the *Florida Building Code* as provided by law, and any further exemptions shall be as determined by the legislature and provided by law:

(a) Building and structures specifically regulated and preempted by the federal government.

(b) Railroads and ancillary facilities associated with the railroad.

(c)   Nonresidential farm buildings on farms.

(d) Temporary buildings or sheds used exclusively for construction purposes.

(e) Mobile or modular structures used as temporary offices, except that the provisions of Part II (Section 553.501-553.513, *Florida Statutes*) relating to accessibility by persons with disabilities shall apply to such mobile or modular structures.

(f)   Those structures or facilities of electric utilities, as defined in Section 366.02, *Florida Statutes*, which are directly involved in the generation, transmission, or distribution of electricity.

(g) Temporary sets, assemblies, or structures used in commercial motion picture or television production, or any sound-recording equipment used in such production, on or off the premises.

(h)  Chickees constructed by the Miccosukee Tribe of Indians of Florida or the Seminole Tribe of Florida. As used in this paragraph, the term “chickee” means an open-sided wooden hut that has a thatched roof of palm or palmetto or other traditional materials, and that does not incorporate any electrical, plumbing, or other nonwood features.

(i) Family mausoleums not exceeding 250 square feet in area which are prefabricated and assembled on site or preassembled and delivered on site and have walls, roofs, and a floor constructed of granite, marble, or reinforced concrete.

(j) Temporary housing provided by the Department of Corrections to any prisoner in the state correctional system.

(k) A building or structure having less than 1,000 square feet which is constructed and owned by a natural person for hunting and which is repaired or reconstructed to the same dimension and condition as existed on January 1, 2011, if the building or structure:

1. Is not rented or leased or used as a principal residence;

2. Is not located within the 100-year floodplain according to the Federal Emergency Management Agency’s current Flood Insurance Rate Map; and

3. Is not connected to an off-site electric power or water supply.

***102.2.1 – 102.2.6. Add to read as follows:***

**102.2.1** In addition to the requirements of Section 553.79 and 553.80, *Florida Statutes*, facilities subject to the provisions of Chapter 395, *Florida Statutes*, and Part II of Chapter 400, *Florida Statutes*, shall have facility plans reviewed and construction surveyed by the state agency authorized to do so under the requirements of Chapter 395, *Florida Statutes*, and Part II of Chapter 400, *Florida Statutes*, and the certification requirements of the federal government.

**102.2.2** Residential buildings or structures moved into or within a county or municipality shall not be required to be brought into compliance with the state minimum building code in force at the time the building or structure is moved, provided:

1.  The building or structure is structurally sound and in occupiable condition for its intended use;

2.  The occupancy use classification for the building or structure is not changed as a result of the move;

3.  The building is not substantially remodeled;

4.  Current fire code requirements for ingress and egress are met;

5.  Electrical, gas and plumbing systems meet the codes in force at the time of construction and are operational and safe for reconnection; and

6.  Foundation plans are sealed by a professional engineer or architect licensed to practice in this state, if required by the *Florida Building Code*, Building for all residential buildings or structures of the same occupancy class.

**102.2.3** The building official shall apply the same standard to a moved residential building or structure as that applied to the remodeling of any comparable residential building or structure to determine whether the moved structure is substantially remodeled. The cost of the foundation on which the moved building or structure is placed shall not be included in the cost of remodeling for purposes of determining whether a moved building or structure has been substantially remodeled.

**102.2.4** This section does not apply to the jurisdiction and authority of the Department of Agriculture and Consumer Services to inspect amusement rides or the Department of Financial Services to inspect state-owned buildings and boilers.

**102.2.5** Each enforcement district shall be governed by a board, the composition of which shall be determined by the affected localities.

1. At its own option, each enforcement district or local enforcement agency may adopt rules granting to the owner of a single-family residence one or more exemptions from the Florida Building Code relating to:

a. Addition, alteration, or repairs performed by the property owner upon his or her own property, provided any addition or alteration shall not exceed 1,000 square feet or the square footage of the primary structure, whichever is less.

b. Addition, alteration, or repairs by a nonowner within a specific cost limitation set by rule, provided the total cost shall not exceed $5,000 within any 12-month period.

c. Building and inspection fees.

2. However, the exemptions under subparagraph 1 do not apply to single-family residences that are located in mapped flood hazard areas, as defined in the code, unless the enforcement district or local enforcement agency has determined that the work, which is otherwise exempt, does not constitute a substantial improvement, including the repair of substantial damage, of such single-family residences.

3. Each code exemption, as defined in sub-subparagraphs 1a, 1b, and 1c shall be certified to the local board 10 days prior to implementation and shall only be effective in the territorial jurisdiction of the enforcement district or local enforcement agency implementing it.

**102.2.6** This section does not apply to swings and other playground equipment accessory to a one- or two-family dwelling.

**Exception:** Electrical service to such playground equipment shall be in accordance with Chapter 27 of this code.

***Section 102 – Applicability. Change Section 102.5 to read as follows:***

**102.5 Partial invalidity.** ~~In the event that 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~~. Reserved.

***Section 102 – Applicability. Change Section 102.6 to read as follows:***

**102.6 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~~*, the *Florida Fire Prevention Code*, or as is deemed necessary by the building official for the general safety and welfare of the occupants and the public.

***Section 102 – Applicability. Change Section 102.7 to read as follows:***

**102.7 Relocation of manufactured buildings.**

(1) Relocation of an existing manufactured building does not constitute an alteration.

(2) A relocated building shall comply with wind speed requirements of the new location, using the appropriate wind speed map. If the existing building was manufactured in compliance with the Standard Building Code (prior to March 1, 2002), the wind speed map of the Standard Building Code shall be applicable. If the existing building was manufactured in compliance with the *Florida Building Code* (after March 1, 2002), the wind speed map of the *Florida Building Code* shall be applicable.

(3) A relocated building shall comply with the flood hazard area requirements of the new location, if applicable.

***Section 102 – Applicability. Add Section 102.8 to read as follows:***

**~~102.8~~****~~Existing mechanical equipment.~~**~~An agency or local government may not require that existing mechanical equipment on the surface of a roof be installed in compliance with the requirements of the Florida Building Code until the equipment is required to be removed or replaced.~~

**Revise 102.8 as follows:**

102.8 An agency or local government may not require that existing mechanical equipment located on or above the surface of a roof be installed in compliance with the requirements of the Florida Building Code except when ~~until~~ the equipment is being ~~required to be removed~~ ~~or~~ replaced or moved during reroofing and is not in compliance with the provisions of the Florida Building Code relating to roof-mounted mechanical units.

***Section 103 – Department of Building Safety. Change Section 103 to read as follows:***

**SECTION 103**

**DEPARTMENT OF BUILDING SAFETY**

**RESERVED**

**~~103.1 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~~*~~.~~  **~~103.2 Appointment.~~**  ~~The~~ *~~building official~~* ~~shall be appointed by the chief appointing authority of the jurisdiction.~~  **~~103.3 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~~*~~. For the maintenance of existing properties, see the~~ *~~International Property Maintenance Code~~*~~.~~

***Change Section 103 to read as follows:***

**Section 104 - Duties and Powers of Building Official**

**104.1 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 compliance 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~~.   Reserved.

**104.2 Applications and permits.** ~~The~~ *~~building official~~* ~~shall receive applications, review~~ *~~construction documents~~* ~~and issue~~ *~~permits~~* ~~for the erection, and~~ *~~alteration~~*~~, demolition and moving of buildings and structures, inspect the premises for which such~~ *~~permits~~* ~~have been issued and enforce compliance with the provisions of this code.~~Reserved.

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

**104.4 Inspections.** ~~The~~ *~~building official~~* ~~shall 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.~~ Reserved.

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

**104.6 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~~* ~~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 is 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.~~Reserved.

**104.7 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 retention of public records.~~ Reserved.

**104.8 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.~~ Reserved.

**104.9 Approved materials and equipment.** (No change)

**104.10 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, upon application of the owner or owner’s representative, 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, accessibility, 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.~~ Reserved.

**~~104.10.1 Flood hazard areas.~~** ~~The building official shall not grant modifications to any provision required in~~ *~~flood hazard areas~~* ~~as established by~~ [~~Section 1612.3~~](javascript:Next('./icod_ibc_2012_16_par123.htm');) ~~unless a determination has been made that:~~

~~1. A showing of good and sufficient cause that the unique characteristics of the size, configuration or topography of the site render the elevation standards of~~ [~~Section 1612~~](javascript:Next('./icod_ibc_2012_16_par121.htm');) ~~inappropriate.~~

~~2. A determination that failure to grant the variance would result in exceptional hardship by rendering the lot undevelopable.~~

~~3. A determination that the granting of a variance 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. A determination that the variance is the minimum necessary to afford relief, considering the flood hazard.~~

~~5. Submission to the applicant of 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.~~  Reserved.

**104.11 Alternative materials, design and methods of construction and equipment.** (No change)

***Section 105 – Permits. Change Section 105.1 to read as follows:***

**105.1 Required.** Any owner or 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 impact resistant coverings, 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*.

***Section 105 – Permits. Change Section 105.1.1 to read as follows:***

**105.1.1 Annual facility permit.** In lieu of an individual *permit* for each *alteration* to an ~~already~~ *~~approved~~* existing electrical, gas, mechanical, ~~or~~ plumbing or interior nonstructural office system(s) ~~installation~~, the *building official* is authorized to issue an annual *permit* ~~upon application therefor to any person, firm or corporation regularly employing one or more qualified tradepersons in the building, structure or on the premises owned or operated by the applicant for the~~ *~~permit~~*~~.~~ for any occupancy to facilitate routine or emergency service, repair, refurbishing, minor renovations of service systems or manufacturing equipment installations/relocations. The building official shall be notified of major changes and shall retain the right to make inspections at the facility site as deemed necessary. An annual facility permit shall be assessed with an annual fee and shall be valid for one year from date of issuance. A separate permit shall be obtained for each facility and for each construction trade, as applicable. The permit application shall contain a general description of the parameters of work intended to be performed during the year.

***Add Section 105.1.3 to read as follows:***

**105.1.3 Food permit**. As per Section 500.12, *Florida Statutes*, a food permit from the Department of Agriculture and Consumer Services is required of any person who operates a food establishment or retail store.

**Revise 105.1.4 to read as follows:**

 105.1.4Public swimming pool

~~(11)~~ The local enforcing agency may not issue a building permit to construct, develop, or modify a public swimming pool without proof of application, whether complete or incomplete,

for an operating permit pursuant to s. 514.031, Florida Statutes. A certificate of completion or occupancy may not be issued until such operating permit is issued. The local enforcing agency shall conduct their review of the building permit application upon filing and in accordance with ~~this~~ Chapter 553, Florida Statutes. The local enforcing agency may confer with the Department of Health, if necessary, but may not delay the building permit application review while awaiting comment from the Department of Health.

***Section 105.2 Work exempt from permit. Change to read as follows:***

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

**~~Building:~~**

~~1. One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided the floor area is not greater than 120 square feet (11 m~~~~2~~~~).~~

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

~~3. Oil derricks.~~

~~4. 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 or impounding Class I, II or IIIA liquids.~~

~~5. Water tanks supported directly on grade if the capacity is not greater than 5,000 gallons (18 925 L) and the ratio of height to diameter or width is not greater than 2:1.~~

~~6. Sidewalks and driveways not more than 30 inches (762 mm) above adjacent grade, and not over any basement or~~ *~~story~~* ~~below and are not part of an~~ *~~accessible~~**~~route~~*~~.~~

~~7. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.~~

~~8. Temporary motion picture, television and theater stage sets and scenery.~~

~~9. Prefabricated swimming pools accessory to a Group R-3 occupancy that are less than 24 inches (610 mm) deep, are not greater than 5,000 gallons (18 925 L) and are installed entirely above ground.~~

~~10. Shade cloth structures constructed for nursery or agricultural purposes, not including service systems.~~

~~11. Swings and other playground equipment accessory to detached one- and two-family~~ *~~dwellings~~*~~.~~

~~12. Window awnings in Group R-3 and U occupancies, supported by an exterior wall that do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.~~

~~13. Nonfixed and movable fixtures, cases, racks, counters and partitions not over 5 feet 9 inches (1753 mm) in height.~~

**~~Electrical:~~**

~~Repairs and maintenance: Minor repair work, including the replacement of lamps or the connection of~~ *~~approved~~* ~~portable electrical equipment to~~ *~~approved~~* ~~permanently installed receptacles.~~   
  
~~Radio and television transmitting stations: The provisions of this code shall not apply to electrical equipment used for radio and television transmissions, but do apply to equipment and wiring for a power supply and the installations of towers and antennas.~~   
  
~~Temporary testing systems: A~~ *~~permit~~* ~~shall not be required for the installation of any temporary system required for the testing or servicing of electrical equipment or apparatus.~~

**Gas:** (No Change)

**Mechanical:**

1. – 7. (No Change)

8.  The installation, replacement, removal or metering of any load management control device.

**Plumbing:** (No Change)

***Section 105.2.2 Repairs. Change to read as follows:***

**105.2.2 Minor r~~R~~epairs.** Ordinary minor repairs may be made with the approval of the building official without a permit, provided the repairs do ~~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; additionally, ordinary minor repairs shall not include addition to, alteration of, replacement or relocation of any standpipe, water supply, sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electric wiring systems or mechanical equipment or other work affecting public health or general safety, and such repairs shall not violate any of the provisions of the technical codes.

***Change Section 105.2.3 to read as follows:***

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

***Change Section 105.3 to read as follows:***

**105.3 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~~ building department 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 107.~~

~~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~~*~~.~~

Permit application forms shall be in the format prescribed by a local administrative board, if applicable, and must comply with the requirements of Section 713.135(5) and (6), *Florida Statutes*.

Each application shall be inscribed with the date of application, and the code in effect as of that date. For a building permit for which an application is submitted prior to the effective date of the *Florida Building Code*, the state minimum building code in effect in the permitting jurisdiction on the date of the application governs the permitted work for the life of the permit and any extension granted to the permit.

**105.3.1 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 offic*ial 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. When authorized through contractual agreement with a school board, in acting on applications for permits, the building official shall give first priority to any applications for the construction of, or addition or renovation to, any school or educational facility.

**105.3.1.1** If a state university, Florida college or public school district elects to use a local government’s code enforcement offices, fees charged by counties and municipalities for enforcement of the *Florida Building Code* on buildings, structures, and facilities of state universities, state colleges, and public school districts shall not be more than the actual labor and administrative costs incurred for plans review and inspections to ensure compliance with the code.

**105.3.1.2** No permit may be issued for any building construction, erection, alteration, modification, repair, or addition unless the applicant for such permit provides to the enforcing agency which issues the permit any of the following documents which apply to the construction for which the permit is to be issued and which shall be prepared by or under the direction of an engineer registered under Chapter 471, *Florida Statutes*:

1.  Plumbing documents for any new building or addition which requires a plumbing system with more than 250 fixture units or which costs more than $125,000.

2.  Fire sprinkler documents for any new building or addition which includes a fire sprinkler system which contains 50 or more sprinkler heads. Personnel as authorized by chapter 633 *Florida Statutes*, may design a fire sprinkler system of 49 or fewer heads and may design the alteration of an existing fire sprinkler system if the alteration consists of the relocation, addition or deletion of not more than 49 heads, notwithstanding the size of the existing fire sprinkler system.

3. Heating, ventilation, and air-conditioning documents for any new building or addition which requires more than a 15-ton-per-system capacity which is designed to accommodate 100 or more persons or for which the system costs more than $125,000. This paragraph does not include any document for the replacement or repair of an existing system in which the work does not require altering a structural part of the building or for work on a residential one, two, three or four-family structure.

An air-conditioning system may be designed by an installing air-conditioning contractor certified under Chapter 489, *Florida Statutes*, to serve any building or addition which is designed to accommodate fewer than 100 persons and requires an air-conditioning system with a value of $125,000 or less; and when a 15-ton-per system or less is designed for a singular space of a building and each 15-ton system or less has an independent duct system. Systems not complying with the above require design documents that are to be sealed by a professional engineer.

**Example 1:** When a space has two 10-ton systems with each having an independent duct system, the contractor may design these two systems since each unit (system) is less than 15 tons.

**Example 2:** Consider a small single-story office building which consists of six individual offices where each office has a single three-ton package air conditioning heat pump. The six heat pumps are connected to a single water cooling tower. The cost of the entire heating, ventilation and air-conditioning work is $47,000 and the office building accommodates fewer than 100 persons. Because the six mechanical units are connected to a common water tower this is considered to be an 18-ton system.

**NOTE:** It was further clarified by the Commission that the limiting criteria of 100 persons and $125,000 apply to the building occupancy load and the cost for the total air-conditioning system of the building.

4.  Any specialized mechanical, electrical, or plumbing document for any new building or addition which includes a medical gas, oxygen, steam, vacuum, toxic air filtration, halon, or fire detection and alarm system which costs more than $5,000.

5. Electrical documents. See *Florida Statutes* 471.003(2)(h).

Documents requiring an engineer seal by this part shall not be valid unless a professional engineer who possesses a valid certificate of registration has signed, dated, and stamped such document as provided in Section 471.025, *Florida Statutes*.

6.  All public swimming pools and public bathing places defined by and regulated under Chapter 514, Florida Statutes

***Section 105.3.3 Add to read as shown:***

**105.3.3** An enforcing authority may not issue a building permit for any building construction, erection, alteration, modification, repair or addition unless the permit either includes on its face or there is attached to the permit the following statement: “NOTICE: In addition to the requirements of this permit, there may be additional restrictions applicable to this property that may be found in the public records of this county, and there may be additional permits required from other governmental entities such as water management districts, state agencies, or federal agencies.”

**105.3.4** A building permit for a single-family residential dwelling must be issued within 30 working days of application therefor unless unusual circumstances require a longer time for processing the application or unless the permit application fails to satisfy the *Florida Building Code* or the enforcing agency’s laws or ordinances.

**105.3.5 Identification of minimum premium policy.** Except as otherwise provided in Chapter 440, *Florida Statutes*, Workers’ Compensation, every employer shall, as a condition to receiving a building permit, show proof that it has secured compensation for its employees as provided in Section 440.10 and 440.38, *Florida Statutes*.

**105.3.6 Asbestos removal.** Moving, removal or disposal of asbestos-containing materials on a residential building where the owner occupies the building, the building is not for sale or lease, and the work is performed according to the owner-builder limitations provided in this paragraph. To qualify for exemption under this paragraph, an owner must personally appear and sign the building permit application. The permitting agency shall provide the person with a disclosure statement in substantially the following form:

**Disclosure Statement:** State law requires asbestos abatement to be done by licensed contractors. You have applied for a permit under an exemption to that law. The exemption allows you, as the owner of your property, to act as your own asbestos abatement contractor even though you do not have a license. You must supervise the construction yourself. You may move, remove or dispose of asbestos-containing materials on a residential building where you occupy the building and the building is not for sale or lease, or the building is a farm outbuilding on your property. If you sell or lease such building within 1 year after the asbestos abatement is complete, the law will presume that you intended to sell or lease the property at the time the work was done, which is a violation of this exemption. You may not hire an unlicensed person as your contractor. Your work must be done according to all local, state and federal laws and regulations which apply to asbestos abatement projects. It is your responsibility to make sure that people employed by you have licenses required by state law and by county or municipal licensing ordinances.

**105.3.7 Applicable Code for Manufactured Buildings**. Manufacturers should be permitted to complete all buildings designed and approved prior to the effective date of a new code edition, provided a clear signed contract is in place. The contract shall provide specific data mirroring that required by an application for permit, specifically, without limitation, date of execution, building owner or dealer, and anticipated date of completion. However, the construction activity must commence within 6 months of the contract's execution. The contract is subject to verification by the Department of Business and Professional Regulation.

***Section 105.4 Validity of permit. Delete in its entirety and replace to read as follows:***

**105.4 Conditions of the permit.**

**105.4.1 Permit intent.** A permit issued shall be construed to be a license to proceed with the work and not as authority to violate, cancel, alter or set aside any of the provisions of the technical codes, nor shall issuance of a permit prevent the building official from thereafter requiring a correction of errors in plans, construction or violations of this code. Every permit issued shall become invalid unless the work authorized by such permit is commenced within six months after its issuance, or if the work authorized by such permit is suspended or abandoned for a period of six months after the time the work is commenced.

**105.4.1.1** If work has commenced and the permit is revoked, becomes null and void, or expires because of lack of progress or abandonment, a new permit covering the proposed construction shall be obtained before proceeding with the work.

**105.4.1.2** If a new permit is not obtained within 180 days from the date the initial permit became null and void, the building official is authorized to require that any work which has been commenced or completed be removed from the building site. Alternately, a new permit may be issued on application, providing the work in place and required to complete the structure meets all applicable regulations in effect at the time the initial permit became null and void and any regulations which may have become effective between the date of expiration and the date of issuance of the new permit.

**105.4.1.3** Work shall be considered to be in active progress when the permit has received an approved inspection within 180 days. This provision shall not be applicable in case of civil commotion or strike or when the building work is halted due directly to judicial injunction, order or similar process.

**105.4.1.4** The fee for renewal reissuance and extension of a permit shall be set forth by the administrative authority.

***Section 105 Expiration. Change Section 105.5 to read as follows:***

**105.5 Expiration.** Reserved. ~~Every~~ *~~permit~~* ~~issued shall become invalid unless the work on the site authorized by such~~ *~~permit~~* ~~is commenced within 180 days after its issuance, or if the work authorized on the site 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.~~

***Section 105 – Permits. Change Section 105.6 to read as follows:***

**105.6 Denial ~~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.~~ Whenever a permit required under this section is denied or revoked because the plan, or the construction, erection, alteration, modification, repair, or demolition of a building, is found by the local enforcing agency to be not in compliance with the *Florida Building Code*, the local enforcing agency shall identify the specific plan or project features that do not comply with the applicable codes, identify the specific code chapters and sections upon which the finding is based, and provide this information to the permit applicant. If the local building code administrator or inspector finds that the plans are not in compliance with the *Florida Building Code*, the local building code administrator or inspector shall identify the specific plan features that do not comply with the applicable codes, identify the specific code chapters and sections upon which the finding is based, and provide this information to the local enforcing agency. The local enforcing agency shall provide this information to the permit applicant.

***Section 105 – Permits. Add Sections 105.8 through 105.17 to read as follows:***

**105.8 Notice of commencement.**As per Section 713.135, *Florida Statutes,* when any person applies for a building permit, the authority issuing such permit shall print on the face of each permit card in no less than 14-point, capitalized, boldfaced type: “WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. A NOTICE OF COMMENCEMENT MUST BE RECORDED AND POSTED ON THE JOB SITE BEFORE THE FIRST INSPECTION. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.”

**105.9 Asbestos.** The enforcing agency shall require each building permit for the demolition or renovation of an existing structure to contain an asbestos notification statement which indicates the owner’s or operator’s responsibility to comply with the provisions of Section 469.003, *Florida Statutes*, and to notify the Department of Environmental Protection of his or her intentions to remove asbestos, when applicable, in accordance with state and federal law.

**105.10 Certificate of protective treatment for prevention of termites.** A weather-resistant job-site posting board shall be provided to receive duplicate treatment certificates as each required protective treatment is completed, providing a copy for the person the permit is issued to and another copy for the building permit files. The treatment certificate shall provide the product used, identity of the applicator, time and date of the treatment, site location, area treated, chemical used, percent concentration and number of gallons used, to establish a verifiable record of protective treatment. If the soil chemical barrier method for termite prevention is used, final exterior treatment shall be completed prior to final building approval.

**105.11 Notice of termite protection**. A permanent sign which identifies the termite treatment provider and need for reinspection and treatment contract renewal shall be provided. The sign shall be posted near the water heater or electric panel.

**105.12 Work starting before permit issuance.** Upon approval of the building official, the scope of work delineated in the building permit application and plan may be started prior to the final approval and issuance of the permit, provided any work completed is entirely at risk of the permit applicant and the work does not proceed past the first required inspection.

**105.13 Phased permit approval.**  After submittal of the appropriate construction documents, 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. 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. Corrections may be required to meet the requirements of the technical codes.

**105.14 Permit issued on basis of an affidavit.**  Whenever a permit is issued in reliance upon an affidavit or whenever the work to be covered by a permit involves installation under conditions which, in the opinion of the building official, are hazardous or complex, the building official shall require that the architect or engineer who signed the affidavit or prepared the drawings or computations shall supervise such work. In addition, they shall be responsible for conformity to the permit, provide copies of inspection reports as inspections are performed, and upon completion make and file with the building official written affidavit that the work has been done in conformity to the reviewed plans and with the structural provisions of the technical codes. In the event such architect or engineer is not available, the owner shall employ in his stead a competent person or agency whose qualifications are reviewed by the building official. The building official shall ensure that any person conducting plans review is qualified as a plans examiner under Part XII of Chapter 468, *Florida Statutes,* and that any person conducting inspections is qualified as a building inspector under Part III of Chapter 468, *Florida Statutes.*

**Exception:** Permit issued on basis of an affidavit shall not extend to the flood load and flood resistance requirements of the *Florida Building Code*.

**105.15 Opening protection.** When any activity requiring a building permit that is applied for on or after July 1, 2008, and for which the estimated cost is $50,000 or more for a site built single-family detached residential structure that is located in the wind borne debris region as defined in this Code and that has an insured value of $750,000 or more, or, if the site built single-family detached residential structure is uninsured or for which documentation of insured value is not presented, has a just valuation for the structure for purposes of ad valorem taxation of $750,000 or more; opening protections as required within this Code or *Florida Building Code, Residential* for new construction shall be provided.

**Exception:** Single family residential structures permitted subject to the *Florida Building Code* are not required to comply with this section.

**105.16 Inspection of existing residential building not impacted by construction.**

(a) A local enforcing agency, and any local building code administrator, inspector, or other official or entity, may not require as a condition of issuance of a one- or two-family residential building permit the inspection of any portion of a building, structure, or real property that is not directly impacted by the construction, erection, alteration, modification, repair, or demolition of the building, structure, or real property for which the permit is sought.

(b) This subsection does not apply to a building permit sought for:

1. A substantial improvement as defined in s. [161.54](http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0100-0199/0161/Sections/0161.54.html), *Florida Statutes* or as defined in the *Florida Building Code*.

2. A change of occupancy as defined in the *Florida Building Code*.

3. A conversion from residential to nonresidential or mixed use pursuant to [1](http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0500-0599/0553/Sections/0553.79.html#1)s. [553.507](http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0500-0599/0553/Sections/0553.507.html)(2)(a), Florida Statutes or as defined in the *Florida Building Code*.

4. A historic building as defined in the *Florida Building Code*.

(c) This subsection does not prohibit a local enforcing agency, or any local building code administrator, inspector, or other official or entity, from:

1. Citing any violation inadvertently observed in plain view during the ordinary course of an inspection conducted in accordance with the prohibition in paragraph (a).

2. Inspecting a physically nonadjacent portion of a building, structure, or real property that is directly impacted by the construction, erection, alteration, modification, repair, or demolition of the building, structure, or real property for which the permit is sought in accordance with the prohibition in paragraph (a).

3. Inspecting any portion of a building, structure, or real property for which the owner or other person having control of the building, structure, or real property has voluntarily consented to the inspection of that portion of the building, structure, or real property in accordance with the prohibition in paragraph (a).

4. Inspecting any portion of a building, structure, or real property pursuant to an inspection warrant issued in accordance with ss. [933.20](http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0900-0999/0933/Sections/0933.20.html)-[933.30](http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0900-0999/0933/Sections/0933.30.html), *Florida Statutes*.

**105.17 Streamlined low-voltage alarm system installation permitting.—**

(1) As used in this section, the term:

(a) "Contractor" means a person who is qualified to engage in the business of electrical or alarm system contracting pursuant to a certificate or registration issued by the department under part II of chapter 489, *Florida Statutes*.

(b) "Low-voltage alarm system project" means a project related to the installation, maintenance, inspection, replacement, or service of a new or existing alarm system, as defined in s. 489.505, Florida Statutes, operating at low voltage, as defined in the National Electrical Code Standard 70, and ancillary components or equipment attached to such a system, including, but not limited to, home-automation equipment, thermostats, and video cameras.

(2) Notwithstanding any provision of this Code, this section applies to low-voltage alarm system projects for which a permit is required by a local enforcement agency.

(3) This section does not apply to the installation or replacement of a fire alarm if a plan review is required.

(4) A local enforcement agency shall make uniform basic permit labels available for purchase by a contractor to be used for the installation or replacement of a new or existing alarm system at a cost as indicated in s. 553.793, *Florida Statutes*.

(a) A local enforcement agency may not require a contractor, as a condition of purchasing a label, to submit information other than identification information of the licensee and proof of registration or certification as a contractor.

(b) A label is valid for 1 year after the date of purchase and may only be used within the jurisdiction of the local enforcement agency that issued the label. A contractor may purchase labels in bulk for one or more unspecified current or future projects.

(5) A contractor shall post an unused uniform basic permit label in a conspicuous place on the premises of the low-voltage alarm system project site before commencing work on the project.

(6) A contractor is not required to notify the local enforcement agency before commencing work on a low-voltage alarm system project. However, a contractor must submit a Uniform Notice of a Low-Voltage Alarm System Project as provided under subsection (7) to the local enforcement agency within 14 days after completing the project. A local enforcement agency may take disciplinary action against a contractor who fails to timely submit a Uniform Notice of a Low-Voltage Alarm System Project.

(7) The Uniform Notice of a Low-Voltage Alarm System Project may be submitted electronically or by facsimile if all submissions are signed by the owner, tenant, contractor, or authorized representative of such persons. The Uniform Notice of a Low-Voltage Alarm System Project shall be in the format prescribed by the local enforcement agency and must comply with the requirements of s. 553.793(7), *Florida Statutes*.

(8) A low-voltage alarm system project may be inspected by the local enforcement agency to ensure compliance with applicable codes and standards. If a low-voltage alarm system project fails an inspection, the contractor must take corrective action as necessary to pass inspection.

(9) A municipality, county, district, or other entity of local government may not adopt or maintain in effect an ordinance or rule regarding a low-voltage alarm system project that is inconsistent with this section.

(10) A uniform basic permit label shall not be required for the subsequent maintenance, inspection, or service of an alarm system that was permitted in accordance with this section.

The provisions of this act are not intended to impose new or additional licensure requirements on persons licensed in accordance with the applicable provisions of chapter 489, *Florida Statutes*.

***Section 107 – Submittal Documents. Change Section 107.1 to read as follows:***

**107.1 General.** Submittal documents consisting of *construction documents*, statement of *special inspections*, geotechnical report and other data shall be submitted in two or more sets with each *permit* application. The *construction documents* shall be prepared by a *registered design professional* where required by Chapter 471, *Florida Statutes* or Chapter 481, *Florida Statutes* ~~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*.

***Section 107.2.5 Site plan. Add Section 107.2.5.2 to read as shown:***

**107.2.5 Site plan.** The construction documents submitted with the application for permit shall be accompanied by a site plan showing to scale the size and location of new construction and existing structures on the site, distances from lot lines, the established street grades and the proposed finished grades and, as applicable, flood hazard areas, floodways, and design flood elevations; and it shall be drawn in accordance with an accurate boundary line survey. 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.

**107.2.5.1 Design flood elevations.** Where design flood elevations are not specified, they shall be established in accordance with Section 1612.3.1.

**107.2.5.2** For the purpose of inspection and record retention, site plans for a building may be maintained in the form of an electronic copy at the worksite. These plans must be open to inspection by the building official or a duly authorized representative, as required by the *Florida Building Code*.

***Section 107.3 Examination of documents. Change to read as follows:***

**107.3 Examination of documents.**The *building official* shall examine or cause to be examined the accompanying submittal documents and shall ascertain by such examinations whether the construction indicated and described is in accordance with the requirements of this code and other pertinent laws or ordinances.

**Exceptions:**

1. Building plans approved pursuant to Section 553.77(5), *Florida Statutes*, and state-approved manufactured buildings are exempt from local codes enforcing agency plan reviews except for provisions of the code relating to erection, assembly or construction at the site. Erection, assembly and construction at the site are subject to local permitting and inspections. Photocopies of plans approved according to Rule 61-41.009, F.A.C., shall be sufficient for local permit application documents of record for the modular building portion of the permitted project.

2. Industrial construction on sites where design, construction and fire safety are supervised by appropriate design and inspection professionals and which contain adequate in-house fire departments and rescue squads is exempt, subject to local government option, from review of plans and inspections, providing owners certify that applicable codes and standards have been met and supply appropriate approved drawings to local building and fire-safety inspectors.

***Section 107.3.4 Design professional in responsible charge. Change to read as follows:***

**107.3.4 Design professional in responsible charge.** Reserved~~When it is required that documents be prepared by a~~ *~~registered design professional~~*~~, the~~ *~~building official~~* ~~shall be authorized to require the owner to engage and designate on the building~~ *~~permit~~* ~~application a~~ *~~registered design professional~~* ~~who shall act as the~~ *~~registered design professional in responsible charge~~*~~. If the circumstances require, the owner shall designate a substitute~~ *~~registered design professional in responsible charge~~* ~~who shall perform the duties required of the original~~ *~~registered design professional in responsible charge~~*~~. The~~ *~~building official~~* ~~shall be notified in writing by the owner if the~~ *~~registered design professional in responsible charge~~* ~~is changed or is unable to continue to perform the duties.~~

~~The~~ *~~registered design professional in responsible charge~~* ~~shall be responsible for reviewing and coordinating submittal documents prepared by others, including phased and deferred submittal items, for compatibility with the design of the building.~~

**107.3.4.1 Deferred submittals**. [No change to IBC text]

**107.3.4.2** Certifications by contractors authorized under the provisions of Section 489.115(4)(b), *Florida Statutes*, shall be considered equivalent to sealed plans and specifications by a person licensed under Chapter 471, *Florida Statutes*, or Chapter 481 *Florida Statutes,* by local enforcement agencies for plans review for permitting purposes relating to compliance with the wind-resistance provisions of the code or alternate methodologies approved by the Florida Building Commission for one- and two-family dwellings. Local enforcement agencies may rely upon such certification by contractors that the plans and specifications submitted conform to the requirements of the code for wind resistance. Upon good cause shown, local government code enforcement agencies may accept or reject plans sealed by persons licensed under Chapters 471, 481 or 489, *Florida Statutes*.

***Section 107 – Submittal Documents. Add Section 107.3.5 to read as follows:***

**107.3.5 Minimum plan review criteria for buildings.** The examination of the documents by the building official shall include the following minimum criteria and documents: a floor plan; site plan; foundation plan; floor/roof framing plan or truss layout; all fenestration penetrations; flashing; and rough opening dimensions; and all exterior elevations:

**Commercial Buildings:**

**Building**

1.   Site requirements:

Parking

Fire access

Vehicle loading

Driving/turning radius

Fire hydrant/water supply/post indicator valve (PIV)

Set back/separation (assumed property lines)

Location of specific tanks, water lines and sewer lines

Flood hazard areas, flood zones, and design flood elevations

2.   Occupancy group and special occupancy requirements shall be determined.

3.   Minimum type of construction shall be determined (see Table 503).

4.   Fire-resistant construction requirements shall include the following components:

Fire-resistant separations

Fire-resistant protection for type of construction

Protection of openings and penetrations of rated walls

Fire blocking and draftstopping and calculated fire resistance

5.   Fire suppression systems shall include:

Early warning smoke evacuation systems Schematic fire sprinklers

Standpipes

Preengineered systems

Riser diagram

Same as above.

6.   Life safety systems shall be determined and shall include the following requirements:

Occupant load and egress capacities

Early warning

Smoke control

Stair pressurization

Systems schematic

7.   Occupancy load/egress requirements shall include:

Occupancy load

Gross

Net

Means of egress

Exit access

Exit

Exit discharge

Stairs construction/geometry and protection

Doors

Emergency lighting and exit signs

Specific occupancy requirements

Construction requirements

Horizontal exits/exit passageways

8.   Structural requirements shall include:

Soil conditions/analysis

Termite protection

Design loads

Wind requirements

Building envelope

Impact resistant coverings or systems

Structural calculations (if required)

Foundation

Flood requirements in accordance with Section 1612, including lowest floor elevations, enclosures, flood damage-resistant materials

 Wall systems

Floor systems

Roof systems

Threshold inspection plan

Stair systems

9.   Materials shall be reviewed and shall at a minimum include the following:

Wood

Steel

Aluminum

Concrete

Plastic

Glass

Masonry

Gypsum board and plaster

Insulating (mechanical)

Roofing

Insulation

10. Accessibility requirements shall include the following:

Site requirements

Accessible route

Vertical accessibility

Toilet and bathing facilities

Drinking fountains

Equipment

Special occupancy requirements

Fair housing requirements

11. Interior requirements shall include the following:

Interior finishes (flame spread/smoke development)

Light and ventilation

Sanitation

12. Special systems:

Elevators

Escalators

Lifts

13. Swimming pools:

Barrier requirements

Spas

Wading pools

**Electrical**

1.   Electrical:

Wiring

Services

Feeders and branch circuits

Overcurrent protection

Grounding

Wiring methods and materials

GFCIs

2.   Equipment

3.   Special occupancies

4.   Emergency systems

5.   Communication systems

6.   Low voltage

7.   Load calculations

8. Design flood elevation

**Plumbing**

1.   Minimum plumbing facilities

2.   Fixture requirements

3.   Water supply piping

4.   Sanitary drainage

5.   Water heaters

6.   Vents

7.   Roof drainage

8.   Back flow prevention

9.   Irrigation

10. Location of water supply line

11. Grease traps

12. Environmental requirements

13. Plumbing riser

14. Design flood elevation

**Mechanical**

1.   Energy calculations

2.   Exhaust systems:

Clothes dryer exhaust

Kitchen equipment exhaust

Specialty exhaust systems

3.   Equipment

4.   Equipment location

5.   Make-up air

6.   Roof-mounted equipment

7.   Duct systems

8.   Ventilation

9.   Combustion air

10. Chimneys, fireplaces and vents

11. Appliances

12. Boilers

13. Refrigeration

14. Bathroom ventilation

15. Laboratory

16. Design flood elevation

**Gas**

1.   Gas piping

2.   Venting

3.   Combustion air

4.   Chimneys and vents

5.   Appliances

6.   Type of gas

7.   Fireplaces

8.   LP tank location

9.   Riser diagram/shutoffs

10. Design flood elevation

**Demolition**

1.   Asbestos removal

**Residential (one- and two-family)**

1.   Site requirements

Set back/separation (assumed property lines)

Location of septic tanks

2.   Fire-resistant construction (if required)

3.   Fire

4.   Smoke detector locations

5.   Egress

Egress window size and location stairs construction requirements

6.   Structural requirements shall include:

Wall section from foundation through roof, including assembly and materials connector tables wind requirements structural calculations (if required)

Flood hazard areas, flood zones, design flood elevations, lowest floor elevations, enclosures, equipment, and flood damage-resistant materials

7.   Accessibility requirements: show/identify accessible bath

8. Impact resistant coverings or systems

**Exemptions.**

Plans examination by the building official shall not be required for the following work:

1.   Replacing existing equipment such as mechanical units, water heaters, etc.

2.   Reroofs

3.   Minor electrical, plumbing and mechanical repairs

4.   Annual maintenance permits

5.   Prototype plans

Except for local site adaptions, siding, foundations and/or modifications.

Except for structures that require waiver.

6.    Manufactured buildings plan except for foundations and modifications of buildings on site.

***Section 107 – Submittal Documents. Add Section 107.6. to read as follows:***

**107.6 Affidavits.**The building official may accept a sworn affidavit from a registered architect or engineer stating that the plans submitted conform to the technical codes. For buildings and structures, the affidavit shall state that the plans conform to the laws as to egress, type of construction and general arrangement and, if accompanied by drawings, show the structural design and that the plans and design conform to the requirements of the technical codes as to strength, stresses, strains, loads and stability. The building official may without any examination or inspection accept such affidavit, provided the architect or engineer who made such affidavit agrees to submit to the building official copies of inspection reports as inspections are performed and upon completion of the structure, electrical, gas, mechanical or plumbing systems a certification that the structure, electrical, gas, mechanical or plumbing system has been erected in accordance with the requirements of the technical codes. Where the building official relies upon such affidavit, the architect or engineer shall assume full responsibility for compliance with all provisions of the technical codes and other pertinent laws or ordinances. The building official shall ensure that any person conducting plans review is qualified as a plans examiner under Part XII of Chapter 468, *Florida Statutes*, and that any person conducting inspections is qualified as a building inspector under Part XII of Chapter 468, *Florida Statutes*.

***Section 107 – Submittal Documents. Add Section 107.6.1 to read as follows:***

**107.6.1 Building permits issued on the basis of an affidavit.** Pursuant to the requirements of federal regulation for participation in the National Flood Insurance Program (44 C.F.R. Parts 59 and 60), the authority granted to the Building Official to issue permits, to rely on inspections, and to accept plans and construction documents on the basis of affidavits and plans submitted pursuant to 105.14 and Section 107.6, shall not extend to the flood load and flood resistance construction requirements of the *Florida Building Code.*

***Section 109 – Fees. Change Section 109.5 to read as follows:***

**109.5 Related fees.** ~~The payment of the fee for the construction,~~ *~~alteration~~*~~, removal or demolition for work done in connection to 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.~~ Reserved.

***Section 109 – Fees. Change Section 109.6 to read as follows:***

**109.6 Refunds.** ~~The~~ *~~building official~~* ~~is authorized to establish a refund policy.~~ Reserved.

***Section 110 – Inspections. Change Section 110.3 to read as follows:***

**110.3 Required inspections.** ~~The~~ *~~building official~~*~~, upon notification, shall make the inspections set forth in Sections 110.3.1 through 110.3.10.~~ The building official upon notification from the permit holder or his or her agent shall make the following inspections, and shall either release that portion of the construction or shall notify the permit holder or his or her agent of any violations which must be corrected in order to comply with the technical codes. The building official shall determine the timing and sequencing of when inspections occur and what elements are inspected at each inspection.

**Building**

1.   Foundation inspection. To be made after trenches are excavated and forms erected and shall at a minimum include the following building components:

·Stem-wall

·Monolithic slab-on-grade

·Piling/pile caps

·Footers/grade beams

1.1. In flood hazard areas, upon placement of the lowest floor, including basement, and prior to further vertical construction, the elevation certification shall be submitted to the authority having jurisdiction.

2.   Framing inspection. To be made after the roof, all framing, fireblocking and bracing is in place, all concealing wiring, all pipes, chimneys, ducts and vents are complete and shall at a minimum include the following building components:

·Window/door framing

·Vertical cells/columns

·Lintel/tie beams

·Framing/trusses/bracing/connectors

·Draft stopping/fire blocking

·Curtain wall framing

·Energy insulation

·Accessibility.

·Verify rough opening dimensions are within tolerances.

 3.   Sheathing inspection. To be made either as part of a dry-in inspection or done separately at the request of the contractor after all roof and wall sheathing and fasteners are complete and shall at a minimum include the following building components:

·Roof sheathing

·Wall sheathing

·Sheathing fasteners

·Roof/wall dry-in.

4.   Roofing inspection. Shall at a minimum include the following building components:

·Dry-in

·Insulation

·Roof coverings

·Flashing

5.   Final inspection. To be made after the building is completed and ready for occupancy.

5.1. In flood hazard areas, as part of the final inspection, a final certification of the lowest floor elevation shall be submitted to the authority having jurisdiction.

6.   Swimming pool inspection. First inspection to be made after excavation and installation of reinforcing steel, bonding and main drain and prior to placing of concrete.

Final inspection to be made when the swimming pool is complete and all required enclosure requirements are in place.

In order to pass final inspection and receive a certificate of completion, a residential swimming pool must meet the requirements relating to pool safety features as described in Section 424.2.17.

7.   Demolition inspections. First inspection to be made after all utility connections have been disconnected and secured in such manner that no unsafe or unsanitary conditions shall exist during or after demolition operations.

Final inspection to be made after all demolition work is completed.

8.   Manufactured building inspections. The building department shall inspect construction of foundations; connecting buildings to foundations; installation of parts identified on plans as site installed items, joining the modules, including utility crossovers; utility connections from the building to utility lines on site; and any other work done on site which requires compliance with the *Florida Building Code*. Additional inspections may be required for public educational facilities (see Section 423.27.20).

9. Where impact resistant coverings or impact resistant systems are installed , the building official shall schedule adequate inspections of impact resistant coverings or impact resistant systems to determine the following:

The system indicated on the plans was installed.

The system is installed in accordance with the manufacturer’s installation instructions and the product approval.

**Electrical**

1.   Underground inspection. To be made after trenches or ditches are excavated, conduit or cable installed, and before any backfill is put in place.

2.   Rough-in inspection. To be made after the roof, framing, fireblocking and bracing is in place and prior to the installation of wall or ceiling membranes.

3.         Final inspection. To be made after the building is complete, all required electrical fixtures are in place and properly connected or protected, and the structure is ready for occupancy.

**Plumbing**

1.   Underground inspection. To be made after trenches or ditches are excavated, piping installed, and before any backfill is put in place.

2.   Rough-in inspection. To be made after the roof, framing, fireblocking and bracing is in place and all soil, waste and vent piping is complete, and prior to this installation of wall or ceiling membranes.

3.   Final inspection. To be made after the building is complete, all plumbing fixtures are in place and properly connected, and the structure is ready for occupancy.

Note: See Section P312 of the *Florida Building Code, Plumbing* for required tests.

**Mechanical**

1.   Underground inspection. To be made after trenches or ditches are excavated, underground duct and fuel piping installed, and before any backfill is put in place.

2.   Rough-in inspection. To be made after the roof, framing, fire blocking and bracing are in place and all ducting, and other concealed components are complete, and prior to the installation of wall or ceiling membranes.

3.         Final inspection. To be made after the building is complete, the mechanical system is in place and properly connected, and the structure is ready for occupancy.

**Gas**

1.   Rough piping inspection. To be made after all new piping authorized by the permit has been installed, and before any such piping has been covered or concealed or any fixtures or gas appliances have been connected.

2.   Final piping inspection. To be made after all piping authorized by the permit has been installed and after all portions which are to be concealed by plastering or otherwise have been so concealed, and before any fixtures or gas appliances have been connected. This inspection shall include a pressure test.

3.         Final inspection. To be made on all new gas work authorized by the permit and such portions of existing systems as may be affected by new work or any changes, to ensure compliance with all the requirements of this code and to assure that the installation and construction of the gas system is in accordance with reviewed plans.

***Section 110 – Inspections. Change Section 110.3.1 to read as follows:***

**110.3.1 Footing and foundation inspection.** ~~Footing and foundation inspections shall be made after excavations for footings are complete and any required reinforcing steel is in place. For concrete foundations, any required forms shall be in place prior to inspection. Materials for the foundation shall be on the job, except where concrete is ready mixed in accordance with ASTM C 94, the concrete need not be on the job~~. Reserved.

***Change Section 110.3.2 to read as follows:***

**110.3.2 Concrete slab and under-floor inspection.** ~~Concrete slab and under-floor inspections shall be made~~~~after in-slab or under-floor reinforcing steel and building~~~~service equipment, conduit, piping accessories and other~~~~ancillary equipment items are in place, but before any concrete~~~~is placed or floor sheathing installed, including the~~~~subfloor.~~ Reserved.

***Change Section 110.3.3 to read as follows:***

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

***Change Section 110.3.4 to read as follows:***

**110.3.4 Frame inspection.** ~~Framing inspections shall be made after the roof deck or sheathing, all framing,~~ *~~fireblocking~~* ~~and bracing are in place and pipes, chimneys and vents to be concealed are complete and the rough electrical, plumbing, heating wires, pipes and ducts are~~ *~~approved~~*~~.~~ Reserved.

***Section 110 – Inspections. Change Section 110.3.9 to read as follows:***

**110.3.9 Special inspections.** ~~For~~ *~~special inspections~~*~~, see Chapter 17.~~ Reserved.

***Section 110 – Inspections. Change Section 110.3.10 to read as follows:***

**110.3.10 Final inspection.** ~~The final inspection shall be made after all work required by the building~~ *~~permit~~* ~~is completed.~~ Reserved.

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

***Section 110 – Inspections. Add Section 110.3.11 to read as follows:***

|  |
| --- |
| **110.3.11 Termites.**  Building components and building surroundings required to be protected from termite damage in accordance with Section 1503.7, Section 2304.13 or Section 2304.11.6, specifically required to be inspected for termites in accordance with Section 2114, or required to have chemical soil treatment in accordance with Section 1816 shall not be covered or concealed until the release from the building official has been received. |

***Section 110 – Inspections. Add Section 110.3.12 to read as follows:***

**110.3.12 Impact resistant coverings or systems.** Where impact resistant coverings or systems are installed to meet requirements of this code, the building official shall schedule adequate inspections of impact resistant coverings or systems to determine the following:

 1. The system indicated on the plans was installed.

2. The system is installed in accordance with the manufacturer’s installation instructions and the product approval.

***Section 110 – Inspections. Change Section 110.4 to read as follows:***

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

***Section 110 – Inspections. Add Sections 110.7 – 110.8 to read as follows:***

**110.7 Shoring.** For threshold buildings, shoring and associated formwork or falsework shall be designed and inspected by a Florida licensed professional engineer, ~~employed by the permit holder or subcontractor,~~ prior to any required mandatory inspections by the threshold building inspector.

**110.8 Threshold building.**

**110.8.1** The enforcing agency shall require a special inspector to perform structural inspections on a threshold building pursuant to a structural inspection plan prepared by the engineer or architect of record. The structural inspection plan must be submitted to the enforcing agency prior to the issuance of a building permit for the construction of a threshold building. The purpose of the structural inspection plans is to provide specific inspection procedures and schedules so that the building can be adequately inspected for compliance with the permitted documents. The special inspector may not serve as a surrogate in carrying out the responsibilities of the building official, the architect, or the engineer of record. The contractor's contractual or statutory obligations are not relieved by any action of the special inspector.

**110.8.2** The special inspector shall determine that a professional engineer who specializes in shoring design has inspected the shoring and reshoring for conformance with the shoring and reshoring plans submitted to the enforcing agency. A fee simple title owner of a building, which does not meet the minimum size, height, occupancy, occupancy classification, or number-of-stories criteria which would result in classification as a threshold building under s. 553.71(7), may designate such building as a threshold building, subject to more than the minimum number of inspections required by the *Florida Building Code*.

**110.8.3** The fee owner of a threshold building shall select and pay all costs of employing a special inspector, but the special inspector shall be responsible to the enforcement agency. The inspector shall be a person certified, licensed or registered under Chapter 471, *Florida Statutes*, as an engineer or under Chapter 481, *Florida Statutes*, as an architect.

**110.8.4** Each enforcement agency shall require that, on every threshold building:

**110.8.4.1** The special inspector, upon completion of the building and prior to the issuance of a certificate of occupancy, file a signed and sealed statement with the enforcement agency in substantially the following form: “To the best of my knowledge and belief, the above described construction of all structural load-bearing components complies with the permitted documents, and the shoring and reshoring conforms to the shoring and reshoring plans submitted to the enforcement agency.”

**110.8.4.2** Any proposal to install an alternate structural product or system to which building codes apply be submitted to the enforcement agency for review for compliance with the codes and made part of the enforcement agency’s recorded set of permit documents.

**110.8.4.3** All shoring and reshoring procedures, plans and details be submitted to the enforcement agency for recordkeeping. Each shoring and reshoring installation shall be supervised, inspected and certified to be in compliance with the shoring documents by the contractor.

**110.8.4.4** All plans for the building which are required to be signed and sealed by the architect or engineer of record contain a statement that, to the best of the architect’s or engineer’s knowledge, the plans and specifications comply with the applicable minimum building codes and the applicable fire-safety standards as determined by the local authority in accordance with this section and Chapter 633, *Florida Statutes.*

**110.8.5** No enforcing agency may issue a building permit for construction of any threshold building except to a licensed general contractor, as defined in Section 489.105(3)(a), *Florida Statutes*, or to a licensed building contractor, as defined in Section 489.105(3)(b), *Florida Statutes*, within the scope of her or his license. The named contractor to whom the building permit is issued shall have the responsibility for supervision, direction, management and control of the construction activities on the project for which the building permit was issued.

**110.8.6** The building department may allow a special inspector to conduct the minimum structural inspection of threshold buildings required by this code, Section 553.73, *Florida Statutes*, without duplicative inspection by the building department. The building official is responsible for ensuring that any person conducting inspections is qualified as a building inspector under Part XII of Chapter 468, *Florida Statutes,* or certified as a special inspector under Chapter 471 or 481, *Florida Statutes*. Inspections of threshold buildings required by Section 553.79(5), *Florida Statutes*, are in addition to the minimum inspections required by this code.

***Section 111 – Certificate of Occupancy. Change Section 111.2 to read as follows:***

**111.2 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 that contains the following:

1. The building *permit* number.

2. The address of the structure.

3. The name and address of the owner.

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 for the occupancy and division of occupancy and the use for which the proposed occupancy is classified.

6. For buildings and structures in flood hazard areas, a statement that documentation of the as-built lowest floor elevation has been provided and is retained in the records of the authority having jurisdiction ~~department of building safety.~~

~~6.~~ 7. The name of the building official.

~~7.~~ 8. The edition of the code under which the permit was issued.

~~8.~~ 9. The use and occupancy, in accordance with the provisions of [Chapter 3](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013030612335929782&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b200v10/st_fl_st_b200v10_1.htm&pseudo=UN1%2C%2CST%2CSTF2012020910241411578%2C%2C).

~~9.~~ 10. The type of construction as defined in [Chapter 6](http://ecodes.cyberregs.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2013030612335929782&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b200v10/st_fl_st_b200v10_1.htm&pseudo=UN1%2C%2CST%2CSTF2012020910260711586%2C%2C).

~~10~~ 11. The design occupant load.

~~11.~~ 12. If an automatic sprinkler system is provided, whether the sprinkler system is required.

~~12.~~ 13. Any special stipulations and conditions of the building *permit.*

**Section 111 – Certificate of Occupancy, Add Section 111.5 to read as follows:**

**111.5 Certificate of Completion**. A Certificate of Completion is proof that a structure or system is complete and for certain types of permits is released for use and may be connected to a utility system. This certificate does not grant authority to occupy a building, such as shell building, prior to the issuance of a Certificate of Occupancy.

***Section 113 – Board of Appeals. Change Section 113 to read as follows:***

**SECTION 113**

**BOARD OF APPEALS**

**RESERVED**

**~~113.1 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 board of appeals shall be appointed by the applicable governing authority and shall hold office at its pleasure. The board shall adopt rules of procedure for conducting its business.~~  **~~113.2 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 have no authority to waive requirements of this code.~~  **~~113.3 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.~~

***Section 114 – Violations. Change Section 114 to read as follows:***

**SECTION 114**

**VIOLATIONS**

**RESERVED**

**~~114.1 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.~~  **~~114.2 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~~ *~~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.~~

**~~114.3 Prosecution of violation.~~** ~~If the notice of violation is not complied with promptly, 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.~~  **~~114.4 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 116 – Unsafe Structures and Equipment. Change Section 116 to read as follows:***

**SECTION 116**

**UNSAFE STRUCTURES AND EQUIPMENT**

**RESERVED**

**~~116.1 Conditions.~~** ~~Structures or existing equipment that are or hereafter become unsafe, insanitary or deficient because of inadequate~~ *~~means of egress~~* ~~facilities, inadequate light and ventilation, or which constitute a fire hazard, or are otherwise dangerous to human life or the public welfare, or that involve illegal or improper occupancy or inadequate maintenance, shall be deemed an unsafe condition. Unsafe structures shall be taken down and removed or made safe, as the~~ *~~building official~~* ~~deems necessary and as provided for in this section. A vacant structure that is not secured against entry shall be deemed unsafe.~~  **~~116.2 Record.~~** ~~The~~ *~~building official~~* ~~shall cause a report to be filed on an unsafe condition. The report shall state the occupancy of the structure and the nature of the unsafe condition.~~  **~~116.3 Notice.~~** ~~If an unsafe condition is found, the~~ *~~building official~~* ~~shall serve on the owner, agent or person in control of the structure, a written notice that describes the condition deemed unsafe and specifies the required repairs or improvements to be made to abate the unsafe condition, or that requires the unsafe structure to be demolished within a stipulated time. Such notice shall require the person thus notified to declare immediately to the~~ *~~building official~~* ~~acceptance or rejection of the terms of the order.~~  **~~116.4 Method of service.~~** ~~Such notice shall be deemed properly served if a copy thereof is (a) delivered to the owner personally; (b) sent by certified or registered mail addressed to the owner at the last known address with the return receipt requested; or (c) delivered in any other manner as prescribed by local law. If the certified or registered letter is returned showing that the letter was not delivered, a copy thereof shall be posted in a conspicuous place in or about the structure affected by such notice. Service of such notice in the foregoing manner upon the owner’s agent or upon the person responsible for the structure shall constitute service of notice upon the owner.~~

**~~116.5 Restoration.~~** ~~The structure or equipment determined to be unsafe by the~~ *~~building official~~* ~~is permitted to be restored to a safe condition. To the extent that repairs,~~ *~~alterations~~* ~~or~~ *~~additions~~* ~~are made or a change of occupancy occurs during the restoration of the structure, such repairs,~~ *~~alterations~~*~~,~~ *~~additions~~* ~~or change of occupancy shall comply with the requirements of Section 105.2.2 and~~ [~~Chapter 34~~](javascript:Next('./icod_ibc_2012_34_par001.htm');)~~.~~

***Section 117 – Variances in Flood Hazard Areas. Add Section 117 to read as follows:***

**SECTION 117**

**VARIANCES IN FLOOD HAZARD AREAS**

**117.1 Flood hazard areas.** Pursuant to section 553.73(5), F.S., the variance procedures adopted in the local floodplain management ordinance shall apply to requests submitted to the Building Official for variances to the provisions of Section 1612.4 of the *Florida Building Code, Building* or, as applicable, the provisions of R322 of the *Florida Building Code, Residential*. This section shall not apply to Section 3109 of the *Florida Building Code, Building.*

**Chapter 2 – Definitions**

***Section 202 – Definitions. Change Section 202 to read as follows:***

**ACCESSIBLE.** ~~A~~ *~~site,~~**~~building, facility~~* ~~or portion thereof that complies with~~ [~~Chapter 11~~](javascript:Next('./icod_ibc_2012_11_par001.htm');). See the *Florida Building Code, Accessibility.*

**ACCESSIBLE ROUTE.** ~~A continuous, unobstructed path that complies with~~ [~~Chapter 11~~](javascript:Next('./icod_ibc_2012_11_par001.htm');)~~.~~ See the *Florida Building Code, Accessibility.*

**ACCESSIBLE UNIT.** ~~A~~ *~~dwelling unit~~* ~~or~~ *~~sleeping unit~~* ~~that complies with this code and the provisions for Accessible units in ICC A117.1.~~ See the *Florida Building Code, Accessibility.*

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

**AGRICULTURAL, BUILDING.** ~~A structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products. This structure shall not be a place of human habitation or a place of employment where agricultural products are processed, treated or packaged, nor shall it be a place used by the public.~~ Reserved

**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.

**AWNING.** An architectural projection that provides weather protection, identity or decoration and is partially or wholly supported by the building to which it is attached. An awning is comprised of a lightweight *frame structure* over which a covering is attached. An awning may be ~~rigid~~ fixed or moveable, cantilevered, or otherwise entirely supported from a building.

**BURIAL CHAMBER MAUSOLEUM.** A family mausoleum consisting of 6 or fewer casket placement crypts plus a chamber to be used for loading of caskets from the interior of the mausoleum which is not below the level of the ground and which is substantially exposed above ground.

**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.

**CHAPEL MAUSOLEUM.** A mausoleum for the public that has heat or air conditioning, with or without a committal area or office.

**CIRCULATION PATH.** ~~An exterior or interior way of passage from one place to another for pedestrians.~~ See the *Florida Building Code, Accessibility.*

**COASTAL HIGH HAZARD AREA ~~FLOOD HAZARD AREA SUBJECT TO HIGH-VELOCITY WAVE ACTION~~.** Area within the special flood hazard area extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area that is subject to high-velocity wave action from storms or seismic sources, and shown on a Flood Insurance Rate Map (FIRM) or other flood hazard map as velocity zones Zone V, VO, VE or V1-30.

**COLUMBARIUM.** A permanent structure consisting of niches.

**COMMISSION.** The Florida Building Commission, created per Section 553.74, Florida Statutes.

**COMPANION CRYPT.** A permanent chamber in a mausoleum for the containment of human remains of more than one individual.

**CRYPT.** A permanent chamber in a mausoleum for the containment of human remains.

**DETECTABLE WARNING.** See the *Florida Building Code, Accessibility.*

**DRY FLOODPROOFING.** A combination of design modifications that results in a building or structure, including the attendant ~~utility~~ utilities and equipment and sanitary facilities, being water tight with walls substantially impermeable to the passage of water and with structural components having the capacity to resist *loads* as identified in ASCE 7.

**DWELLING UNIT OR SLEEPING UNIT, TYPE A.** Reserved.

**DWELLING UNIT OR SLEEPING UNIT, TYPE B.** Reserved**.**

**EMPLOYEE WORK AREA.** ~~All or any portion of a space used only by employees and only for work.~~ *~~Corridors~~*~~, toilet rooms, kitchenettes and break rooms are not employee work areas.~~ See the *Florida Building Code, Accessibility*.

**ENFORCEMENT AGENCY.**

Local enforcement agency - change the definition to read as follows:

means 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.** The agency of state government with authority to make inspections of buildings and to enforce the codes, as required by Ch. 553, F.S., which establish standards for design, construction, erection, alteration, repair, modification, or demolition of public or private buildings, structures, or facilities.

**~~Local enforcement agency.~~** ~~Means an agency of local government with authority 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 this part, 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.

**FAMILY MAUSOLEUM**. A mausoleum for the private use of a family or group of family members.

**FLOATING RESIDENTIAL UNIT.** Means a structure primarily designed or constructed as a living unit, built on a floating base, which is not designed primarily as a vessel, is not self-propelled although it may be towed about from place to place, and is primarily intended to be anchored or otherwise moored in a fixed location.

**GARAGE DOOR MANUFACTURER:**The party responsible for the completed assembly of the garage door components.

**GARDEN MAUSOLEUM.** A mausoleum for the public built without heat or air conditioning but may contain an open-air committal area.

**HABITABLE SPACE.**A space in a ~~building~~ structure for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, screen enclosures, sunroom Categories I, II and III as defined in the AAMA/NPEA/NSA 2100, storage or utility spaces and similar areas are not considered habitable spaces.

**HEIGHT, THRESHOLD BUILDING.** The height of the building is at the mean distance between the eaves and the ridge of the roofing structure. If the distance from grade to the line which is the mean distance between the eaves and the ridge of the roofing structure is more than 50 feet, the building is to be considered a "threshold building" within the contemplation of the Threshold Building Act.

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

**HISTORIC BUILDINGS.** Buildings that are listed in or eligible for listing in the National Register of Historic Places, or designated as historic under an appropriate state or local law (see Chapter 12 of the *Florida Existing Building Code*).

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

**LOCAL FLOODPLAIN MANAGEMENT ORDINANCE.** An ordinance or regulation adopted pursuant to the requirements in Title 44 Code of Federal Regulations, Parts 59 and 60 for participation in the National Flood Insurance Program.

**LOWEST FLOOR.** The lowest floor of the lowest enclosed area, including *basement*, but excluding any unfinished or flood-resistant enclosure, usable solely for vehicle parking, building access or limited storage provided that such enclosure is not built so as to render the structure in violation of this section. ~~1612.~~

**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.*

**MAUSOLEUM.** A permanent structure or building which is substantially exposed above the ground and is intended for the interment, entombment, or inurnment of human remains.

**MEANS OF ESCAPE.** As used in Section 1008.1.4.5, a way out of a building or structure that does not conform to the strict definition of means of egress but does provide an alternate way out. A means of escape consists of a door, stairway, passage or hall providing a way of unobstructed travel to the outside at street or ground level. It may also consist of a passage through an adjacent non-lockable space, independent of and remotely located from the means of egress, to any approved exit.

**MECHANICAL EQUIPMENT SCREEN**. A partially enclosed rooftop structure~~, not covered by a roof,~~ used to aesthetically conceal heating, ventilation and air conditioning (HVAC), ~~plumbing,~~ electrical or mechanical equipment from view.

**NICHE.** A permanent chamber in a columbarium or mausoleum to hold the cremated remains of one or more individuals.

**NON-VISITATION CRYPT MAUSOLEUM.** A mausoleum for the public where the crypts are not accessible to the public.

**PENTHOUSE**. An enclosed, unoccupied rooftop structure above the roof of a building other than a tank, tower, spire, dome cupola or bulkhead ~~used for sheltering mechanical and electrical equipment, tanks, elevators and related machinery, and vertical~~ *~~shaft~~* ~~openings~~.

**PLANS.** All construction drawings and specifications for any structure necessary for the building official to review in order to determine whether a proposed structure, addition or renovation will meet the requirements of this code and other applicable codes

**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*.

**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.**

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

**SKYLIGHTS AND SLOPED GLAZING.** Glass or other transparent or translucent glazing material installed at a slope of 15 degrees (0.26 rad) or more from vertical. Glazing material in skylights, including *unit skylights*,*tubular daylighting devices,* solariums, *sunrooms*, roofs and sloped walls, are included in this definition.

**SPECIAL INSPECTION.** Reserved. ~~Inspection of construction requiring the expertise of an~~ *~~approved~~**~~special~~**~~inspector~~* ~~in order to ensure compliance with this code and the~~ *~~approved construction documents~~*~~.~~

**~~Continuous Special Inspection.~~** ~~Special inspection by the~~ *~~special inspector~~* ~~who is present when and where the work to be inspected is being performed.~~

**~~Periodic Special Inspection.~~** ~~Special inspection by the~~ *~~special inspector~~* ~~who is intermittently present where the work to be inspected has been or is being performed.~~

**SPECIAL INSPECTOR.** Reserved. ~~A qualified person employed or retained by an~~ *~~approved~~* ~~agency and~~ *~~approved~~* ~~by the~~ *~~building official~~* ~~as having the competence necessary to inspect a particular type of construction requiring special inspection.~~

**STATE ENFORCEMENT AGENCY.** Means the agency of state government with authority to make inspections of buildings and to enforce the codes, as required by this part, which establish standards for design, construction, erection, alteration, repair, modification or demolition of public or private buildings, structures or facilities.

**STRUCTURAL DETERMINATION.** For purposes of this code, "structural“ shall mean any part, material or assembly of a building or structure which affects the safety of such building or structure and/or which supports any dead or designed live load and the removal of which part, material or assembly could cause, or be expected to cause, all or any portion to collapse or fail.

**STRUCTURAL OBSERVATION.** Reserved. ~~The visual observation of the structural system by a~~ *~~registered design professional~~* ~~for general conformance to the~~ *~~approved construction documents~~*~~. Structural observation does not include or waive the responsibility for the inspection required by Section 110,~~ [~~1705~~](javascript:Next('./icod_ibc_2012_17_par039.htm');) ~~or other sections of this code.~~

**SUBSTANTIAL IMPROVEMENT.** Any *repair*, reconstruction, rehabilitation, alteration, *addition* or other improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or *repair* is started. If the structure has sustained *substantial damage*, any repairs are considered substantial improvement regardless of the actual *repair* work performed. The term does not, however, include either:

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

2. Any *alteration* of a historic structure provided that the *alteration* will not preclude the structure’s continued designation as a historic structure.

**SUNROOM.**

1. A one-*story* structure attached to a building with a glazing area in excess of 40 percent of the gross area of the structure’s *exterior walls* and roof.

2. A one-story structure added to a dwelling with solid roof panels without sloped glazing. The sunroom walls may have any configuration, provided the open areas with operable or fixed glass or windows or side hinged or sliding glass doors of the longer wall and one additional wall is equal to at least 65 percent of the area below 6 foot 8 inches (2032 mm) of each wall, measured from the floor. For the purposes of this code the term sunroom as used herein shall include conservatories, sunspaces, solariums, and porch or patio covers or enclosures.

**TECHNICALLY INFEASIBLE.** ~~An~~ *~~alteration~~* ~~of a building or a~~ *~~facility~~* ~~that has little likelihood of being accomplished because the existing structural conditions require the removal or~~ *~~alteration~~* ~~of a load-bearing member that is an essential part of the structural frame, or because other existing physical or site constraints prohibit modification or addition of elements, spaces or features which are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility.~~ See the *Florida Building Code, Accessibility.*

**THRESHOLD BUILDING.** In accordance with Florida Statute, any building which is greater than 3 stories or 50 feet in height, or which has an assembly occupancy classification that exceeds 5,000 square feet in area and an occupant content of greater than 500 persons.

**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 open space on at least two sides.

**TYPE A UNIT.** ~~A~~ *~~dwelling unit~~* ~~or~~ *~~sleeping unit~~* ~~designed and constructed for accessibility in accordance with this code and the provisions for~~ *~~Type A units~~* ~~in ICC A117.1.~~ Reserved.

**TYPE B UNIT.** ~~A~~ *~~dwelling unit~~* ~~or~~ *~~sleeping unit~~* ~~designed and constructed for accessibility in accordance with this code and the provisions for~~ *~~Type B units~~* ~~in ICC A117.1, consistent with the design and construction requirements of the federal Fair Housing Act.~~ Reserved.

**VALUE.** The estimated current replacement cost of the building in kind.

**WHEELCHAIR SPACE.** ~~A space for a single wheelchair and its occupant.~~ See the *Florida Building Code, Accessibility.*

**Chapter 3 – Use and Occupancy Classification**

***Section 304 – Business Group B. Add Section 304 to read as shown:***

**304.3** Public and private colleges and universities shall comply with Section 468.

**304.4** Florida colleges shall comply with Section 453.

***Section 305 – Educational Group E. Add Section 305 to read as shown:***

**305.3** Public and private educational occupancies shall comply with Section 443.

**305.4** Public education occupancies shall comply with Section 453.

***Section 307 – High-hazard Group H. Change Section 307.1 to read as shown:***

**307.1 High-hazard Group H.** High-hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or health hazard in quantities in excess of those allowed in *control areas* complying with Section 414, based on the maximum allowable quantity limits for control areas set forth in Tables 307.1(1) and 307.1(2). Hazardous occupancies are classified in Groups H-1, H-2, H-3, H-4 and H-5 and shall be in accordance with this section, the requirements of Section 415 and the ~~International Fire Code~~ *Florida Fire Prevention Code*. Hazardous materials stored, or used on top of roofs or canopies shall be classified as outdoor storage or use and shall comply with the ~~International Fire Code~~ Florida Fire Prevention *Code*.

**Exceptions**: The following shall not be classified in Group H, but shall be classified in the occupancy that they most nearly resemble:

1. – 13. (No Change)

14.    Mercantile occupancies offering for retail sale sparklers, novelties and trick noisemakers as defined at Section 791.01, *Florida Statutes*, and that are not defined as fireworks by Chapter 791, *Florida Statutes*. Storage of sparklers and other novelties or trick noisemakers as defined in Chapter 791, Florida Statutes, within mercantile occupancies shall be in accordance with Section 791.055, *Florida Statutes*.

**Chapter 4 – Special Detailed Requirements Based on Use and Occupancy**

***Section 401 – Scope. Add section 401.2 to read as shown:***

**401.2 Additional design criteria.**

**401.2.1 Scope.** In addition to the provisions of this chapter, the following special occupancies, standards, requirements and codes shall conform to the following sections:

Section 449: Hospitals

Section 450: Nursing homes

Section 451: Ambulatory surgical centers

Section 452: Birthing centers

Section 453: State requirements for educational facilities

Section 454: Swimming pools and bathing places

Section 455: Public lodging establishments

Section 456: Public food service establishments

Section 457: Mental health programs

Section 458: Manufactured buildings

Section 459: Boot camps for children

Section 460: Mausoleums and columbariums

Section 461: Transient public lodging establishments

Section 462: Use of asbestos in new public buildings or buildings newly constructed for lease to government entities–prohibition

Section 463: Adult day care

Section 464: Assisted living facilities

Section 465: Control of radiation hazards

Section 466: Day care occupancies

Section 467: Hospice Inpatient Facilities and Units and Hospice Residences.

Section 468: Schools, Colleges and Universities

Chapter 30: Elevators and conveying systems

Section 3109: Structures seaward of a coastal construction control line

**401.2.2 General.**  Where in any specific case, Sections 449 through 468 specify different materials, methods of construction, design criteria or other requirements then found in this code, the requirements of Sections 449 through 468 shall be applicable.

**401.2.3 Referenced standards.** Further information concerning the requirements for licensing, maintenance, equipment or other items not related to design and construction may be obtained for all state codes, rules and standards from the State of Florida Bureau of Administrative Codes.

***Section 403 – High-Rise Buildings. Change Section 403.4.8 to read as follows:***

**403.4.8 Standby power.** A standby power system complying with Chapter 27 and Section 3003 shall be provided for standby power loads specified in 403.4.8.2. Where elevators are provided in a *high-rise building* for *accessible means of egress*, fire service access or occupant self-evacuation, the standby power system shall also comply with Sections1007 ~~1007.4~~, 3007 or 3008, as applicable.

***Section 406 – Motor-Vehicle Related Occupancies. Change Section 406.4.1 to read as follows:***

**406.4.1 Clear height.** The clear height of each floor level in vehicle and pedestrian traffic areas shall be not less than 7 feet (2134 mm). Vehicle and pedestrian areas accommodating van-accessible parking shall comply with the *Florida Building Code, Accessibility* ~~Section 1106.5~~.

***Section 419 – Live / Work Units. Change Section 419.9 to read as follows:***

**419.9 Plumbing facilities.** The nonresidential area of the *live/work unit* shall be provided with minimum plumbing facilities as specified by Chapter 29, based on the function of the nonresidential area. Where the nonresidential area of the *live/work unit* is required to be *accessible* by the *Florida Building Code, Accessibility* ~~Section 1103.2.13~~, the plumbing fixtures specified by Chapter 29 shall be *accessible*.

**Florida Specific Amendment.**

***Sections 425 through 448. Add all to read as shown:***

**SECTIONS 425 through 448**

**RESERVED.**

***Section 449 – Hospitals***

***Add Florida specific requirements from Section 419 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 449**

**HOSPITALS**

**449.1 Scope.**

|  |
| --- |
| **449.1.1** All newly licensed or newly constructed hospitals, all hospital outpatient facilities and hospital mobile and transportable units unless exempted by Chapter 395.0163, and all additions, alterations or renovations to an existing licensed hospital shall comply with all applicable requirements of this code and the minimum standards of design, construction and specified minimum essential utilities and facilities of this Section and shall have plans reviewed and construction surveyed by the state agency authorized to do so by Chapter 553.80 (1)(c), *Florida Statutes* to assure compliance with all applicable requirements of this code. |
|  |

**449.1.2** A change of ownership of an existing licensed hospital or a change to an existing hospital’s license or functional use that does not require new physical plant or design revisions or changes shall not require compliance with this section.

**449.1.3** The Florida Building Code, Existing Buildings, Section 101.2 Scope exempts state licensed hospitals from compliance with that code. Any repair, alteration, change of occupancy, addition and relocation of an existing state licensed hospital shall comply with the applicable requirements of this code and this Section.

**449.1.4** For project submission and fee requirements, and other administrative, licensure, and programmatic provisions for hospitals, see Agency for Health Care Administration [AHCA] Chapter 59A-3 *Florida Administrative Code* (F.A.C.) and Chapter 395, *Florida Statutes*.

**449.1.5** For state licensure purposes, these codes and standards shall be applicable to the project on the effective date of this code at the time of preliminary plan approval by the Agency for Health Care Administration (the Agency) or at the first construction document review if there has been no previous preliminary plan approval for that project.

**449.2** Additional codes and standards for the design and construction of general, rehabilitative, and psychiatric hospitals, including Intensive Residential Treatment Facilities (IRTF) for children and adolescents, and unless exempted by Chapter 395.0163, *Florida Statutes*, all hospital outpatient facilities and hospital mobile and transportableunits.In addition to the minimum standards required Section 449 of this code, *Chapter 59A-3 Florida Administrative Code*, or by Chapter 395, *Florida Statutes*, all new hospital~~s~~ facilities and all additions, alterations or renovations to an existing licensed hospital, as listed in Section 449.2 of this code shall also be in compliance with the following codes and standards on the effective date of this code as described in Section 449.1.5 of this code**.**

**449.2.1** The fire codes described in Chapter 69A-53, Uniform Fire Safety Standards for Hospitals and Nursing Homes, *Florida Administrative Code*.

**449.2.2** *The Guidelines for Design and Construction of Health Care Facilities* (*The Guidelines*), as reference in Chapter 35 of this code.

**449.3** **Additional physical plant requirements for general, rehabilitation, and psychiatric hospitals, including Intensive Residential Treatment Facilities (IRTF) for children and adolescents, and unless exempted by Chapter 395.0163, *Florida Statutes*, all hospital outpatient facilities and hospital mobile and transportable units.** In addition to the codes and standards referenced in Section 449.2 of this code, the following minimum standards of construction and specified minimum essential facilities, shall apply to all new hospitals and all additions, alterations or renovations to an existing licensed hospital, as described in Section 449.1 of this code and listed in Section 449.3 of this code**.**

**449.3.1** **Critical care units.** (Reference *The Guidelines* for other requirements.)

**449.3.1.1** Sliding doors used for access to critical care rooms may be either manual or power operated and if located on an exit access corridor shall be smoke resistive and equipped with latching hardware.

**449.3.2** **Newborn intensive care units.** (Reference *The Guidelines* for other requirements.)

**449.3.2.1** General categories of neonatal services in the State of Florida are Level I, newborn nursery; Level II, intermediate care unit; and Level III, intensive care unit. Facilities which offer obstetrical services shall provide at a minimum a Level I newborn nursery or a holding nursery that shall meet the requirements of *The Guidelines,* and facilities that offer neonatal care for Level II and Level III neonatal services shall meet the requirements of The Guidelines for a newborn intensive care unit.

***Change Section 449.3.3 to read as shown:***

**449.3.3 Mobile testing and treatment facilities.** ~~(Reference~~ *~~The Guidelines~~* ~~for other requirements.)~~

**449.3.3.1** In addition to any other state of Florida required permits, mobile facilities shall be approved in advance by the Agency for Health Care Administration before they may be utilized for patient services.

**449.3.3.2** The ~~electrical systems in the~~ mobile facility shall comply with the applicable requirements of the *Florida Building Code, Building,* The *Guidelines*, Part 5 Other Health Care Facilities, Chapter 5.1 Mobile, Transportable, and Relocatable Units, and with Section 449~~.3.11~~ of this code for the type of service to be provided.

**449.3.3.~~2~~3** Mobile or transportable units that are limited to providing non-invasive, diagnostic and treatment services without the use of anesthetics shall not be required to comply with other sections of the *Guidelines* as described in the Guidelines Chapter 5.1, Section 5.1-1.1.2.1.

**449.3.3.~~3~~4** Electrical connection to the hospital electrical system shall be permitted only when the mobile facility complies with appropriate requirements of the *Florida Building Code, Building.*

**449.3.3.~~4~~5** When units provide critical care procedures, there shall be a "code blue" code call station in the unit connected to an attended location to summon assistance from the hospital emergency resuscitation response team.

**~~449.3.3.5~~** ~~The mechanical systems in the mobile facility shall comply with the requirements of the~~ *~~Florida Building Code, Mechanical,~~**~~The Guidelines~~* ~~and with Section 449.3.6 of this code.~~

***Change Section 449.3.4 to read as shown:***

**449.3.4 Architectural Details, Surfaces, and Furnishings.** (Reference *The Guidelines* for other requirements.)

**449.3.4.1** Each patient sleeping room shall ~~be provided with a window that shall have a minimum 20-foot (6 m) unobstructed vista measured perpendicularly from the plane of the window.~~ have a window(s) with a view to the outside of the building that is visible from the patient's bed except when a cubicle curtain is closed. The clear opening of the window's width and height shall have a minimum of 20 feet (6.10 m) unobstructed vista to any permanent structure or equipment, and a minimum of 15 feet (4.57 m) unobstructed vista to any vehicular driveway or property line measured horizontally from the plane of the window.

**449.3.4.2** Ceilings in rooms with ceiling-mounted surgical light fixtures and in kitchens shall be a minimum height of 9 feet (2.7 m).

**449.3.4.3** ~~Soap dispensers shall be provided at all hand washing facilities. If soap dishes are used, only fully recessed soap dishes shall be permitted in patient tubs or showers.~~ A pair of doors opening to a room or closet that is located on an exit access corridor shall be equipped with automatic positive latching for both the active and inactive door leaf and shall be equipped with rabbets, bevels, or an astragal at the meeting edges of the doors. The inactive door leaf shall be equipped with either an automatic or semi-automatic flush bolt to provide positive latching. Where the doors are not required to be equipped with closers, a door coordinator is not required.

**449.3.4.4** Toilet compartment partitions and urinal screens ~~in the men's toilet rooms shall not be constructed of enameled steel.~~ shall be constructed of products that do not rust, corrode or delaminate.

**449.3.4.5** All smoke barriers, horizontal exits and exit passageway partitions shall be constructed prior to the construction of all intervening walls.

**449.3.4.6** Smoke barriers shall be constructed so as to provide a continuous smoke-tight membrane from exterior wall to exterior wall and from the floor to the underside of the deck above. This includes interstitial space and the area above solid fire tested membranes.

**449.3.4.7** Where it is not possible to visually inspect a fire rated partition, wall or barrier or a smoke ~~fire/smoke~~ barrier that extends through the attic or interstitial space to the roof or floor deck above because of the ~~fire-tested membrane~~ location of a monolithic ceiling membrane, ~~fire-rated~~ ceiling access panel(s) shall be installed adjacent to each side of the ~~smoke partitions~~ partition, wall or barrier at intervals not exceeding 30 feet (9.00 m) and in such locations as necessary to view all surfaces of the partition, wall or barrier. Other ceiling access panels shall only be installed as required by other sections of the Code. ~~Fire walls, fire barriers, fire partitions, smoke barriers or any other wall required to have fire rated protected openings shall be effectively and permanently identified with signs or stenciling. Such identification shall be above any decorative ceiling and in concealed spaces. Suggested wording for a fire/smoke partition is as follows: "FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS."~~ Partitions, walls and barriers requiring protected openings or penetrations shall be identified in accordance with Section 703 of this code.

**449.3.4.8**  Where electrical conduits, cable trays, ducts and utility pipes pass through the smoke ~~partition~~ barrier, the utilities shall be located so that access is maintained to adjacent wall surfaces and to all damper access panels. The details shall show the studs and reinforcing half studs so that proper support is provided for the wall surfacing material. There shall be a minimum clearance of 6 inches (152 mm) between all conduits, piping and duct work that are parallel or adjacent to all fire and fire/smoke rated walls to facilitate the inspection of these walls.

**449.3.4.9** The use of pocket sliding or folding doors to patient use toilet, baths, or showers shall not be permitted. A sliding door equipped with sliding door hardware located on the patient room side of the wall and not equipped with a bottom door track shall be permitted.

**449.3.5 Elevators where required.** (Reference *The Guidelines* for other requirements.)

**449.3.5.1** All elevators shall be in compliance with the requirements of Chapter 30 of the *Florida Building Code, Building* and Chapter 69A-47, *Florida Administrative Code*, "Uniform Fire Safety Standards for Elevators."

**449.3.6** **Heating, ventilating and air-conditioning systems.** (Reference *The Guidelines* for other requirements.)

***Change Section 449.3.6.1 to read as shown:***

**449.3.6.1** Air-handling equipment ~~located inside of the building shall be located in mechanical equipment rooms unless it serves only one room and it is located in that room.~~ shall be installed exterior of the  building, to include  the roof, in a designated equipment room(s), or in a space(s) located in an attic(s**).** If the equipment serves only one room it may be located above the ceiling and shall be accessible through an access opening in accordance with this code. Access panels are not required for lay-in ceiling installations, provided the service functions are not obstructed by other above-ceiling construction, such as electrical conduits, piping, audio visual cabling and like equipment components or supports.

**449.3.6.2** All new hospital, outpatient surgery and cardiac catheterization facility construction shall have completely ducted air supply, return, outside air and exhaust systems. In hospital building~~s~~ with multiple uses, tenants or occupancies, located on a separate floor or floors within the building, or located in a medical office building, only the licensed health care areas where invasive procedures, as defined by *The Guidelines*, are performed shall be required to be served by separate ducted mechanical air supply, return and exhaust systems.

**449.3.6.3** In new construction, horizontal offsets of duct system risers penetrating more than one floor shall not be allowed.

***Change Section 449.3.6.4 to read as shown:***

**449.3.6.4** Flexible ~~duct work~~ ducts shall ~~have a continuous metal inner liner encased by insulating material with an outer vapor jacket conforming to UL 181 unless the flexible duct meets~~ be Listed and Labeled to the UL181 Standard for Factory-Made Air Ducts and Air Connectors and shall be Class 0 or Class 1. Flexible ducts shall meet the following additional performance rating criteria:

**449.3.6.4.1** The duct ~~conforms to UL Class 1 Air Duct, Standard 181 with minimum rated air velocity of 4,000 feet per minute, and is pressure rated for a minimum of 4-inches water gage positive pressure and 1-inch water gage negative pressure~~ shall have a minimum rated air velocity of 4,000 feet per minute, a minimum positive pressure rating of 4 inches water gauge, and a minimum negative pressure rating of 1 inch water gauge.

**449.3.6.4.2** The ~~inner core of the~~ flexible duct ~~is constructed of Chlorinated Polyethylene (CPE) material encircling a steel helix bonded to the CPE~~ outer vapor barrier shall have a perm rating not greater than 0.05 perms when tested in accordance with ASTM E 96, Procedure A.

**449.3.6.4.3**~~The duct has a fire-retardant metalized vapor barrier that is reinforced with crosshatched fiberglass scrim having a permanence of not greater than 0.05 perms when tested in accordance with ASTM E 96 Procedure A~~ Flexible Air Connectors shall be limited to 14 feet maximum installed length and shall not pass through any wall, partition, or enclosure of a vertical shaft that is required to have a fire resistance rating of 1 hour or more. Flexible Air Ducts shall not be limited in length.

**~~449.3.6.4.4~~** ~~The duct has passed an impact test equal to the UL 181 standard, conducted by a nationally recognized testing laboratory (NRTL) except it shall use a 25-pound weight dropped from a height of 10 feet. As a result of the test, the inner and outer surfaces of the sample shall not have ruptured, broken, torn, ripped, collapsed or separated in order for the duct to pass the test. In addition, the helix shall rebound to a cross-sectional elliptical area not less than 80 percent of the original test sample diameter. The use of flexible duct shall be limited to flexible air connector applications.~~

**449.3.6.5** Variable air volume systems shall not be permitted for use in surgical departments, obstetrical departments, laboratories, isolation rooms and critical care units and rooms.

**449.3.6.6** Filter housing frame blank-off panels shall be permanently attached to the frame, constructed of rigid materials and have sealing surfaces equal to or greater than the filter media installed in the filter frame. All joints between the blank-off panels, filter housing frames and filter support structure shall be caulked air tight.

**449.3.7** **Fan and damper control during fire alarm.**

**449.3.7.1** During an automatic fire alarm activation or the activation of a duct smoke detector, fan systems and fan equipment serving more than one room shall be stopped to prevent the movement of smoke by mechanical means from the zone in alarm to adjacent smoke zones.

**449.3.7.2** Fan control shall be designed so as to minimize the interruption of heating, ventilating and air conditioning in compartments remote from the compartment in alarm.

**449.3.7.3** Fan control shall not interfere with the continuous operation of exhaust systems conveying ethylene oxide or other hazardous chemicals and fumes or systems required to operate continuously for the health and safety of occupants. Such systems shall include fume hood exhaust deemed by the governing body of the hospital to present a hazard to occupants if exhaust airflow is stopped. Air-handling systems shall be designed to allow for continuous operation of all such systems and to minimize movement of smoke by mechanical means from the zone in alarm.

**449.3.8** **Carbon monoxide detector**. (See Section 908.7 of this code).

**449.3.9** **Plumbing**. (Reference *The Guidelines* for other requirements.)

**449.3.9.1** All plumbing systems shall be designed and installed in accordance with the *Florida Building Code, Plumbing*.

**449.3.10** **Fire pump**. Where required in new construction, fire pumps and ancillary equipment shall be separated from other functions by construction having a 2-hour fire-resistance rating.

**449.3.10.1** The fire pump normal service disconnect shall be rated to hold locked rotor current indefinitely. If the approved normal service disconnect is located on the exterior, it shall be supervised by connection to the fire pump remote annunciator and shall provide a separate fire alarm system trouble indication.

**449.3.10.2** When the fire pump is placed on the emergency system in addition to the normal supply, the emergency feeder protective device shall be sized in accordance with maximum rating or settings of Chapter 27 of the *Florida Building Code, Building.*

**449.3.10.3** The fire pump transfer switch may be either manual or automatic. If located on the line side of the controller as a separate unit, the switch must be rated for the pump motor locked rotor current indefinitely and must be located in the pump room.

**449.3.10.4** Combination fire pump controller and transfer switch units listed by the Underwriter's Laboratories, Inc., as prescribed by Chapter 27 of the *Florida Building Code, Building* are acceptable when the transfer switch has exposable and replaceable contacts, not circuit breaker types, rated for the available short-circuit current.

**449.3.10.5** The fire pump shall be installed in a readily accessible location. When it is located on the grade level floor, there shall be direct access from the exterior.

**449.3.11 Electrical requirements.** (Reference *The Guidelines* for other requirements.)

**449.3.11.1** All material, including equipment, conductors, controls, and signaling devices, shall be installed to provide a complete electrical system with the necessary characteristics and capacity to supply the electrical facility requirements as shown in the specifications and as indicated on the plans.

**449.3.11.2** All materials and equipment shall be factory listed as complying with applicable standards of Underwriter's Laboratories, Inc. or other similarly established standards of a nationally recognized testing laboratory (NRTL) that has been certified by the Occupational Safety and Health Administration (OSHA) for that referenced standard.

**449.3.11.3** Field labeling of equipment and materials shall be permitted only when provided by a nationally recognized testing laboratory that has been certified by the Occupational Safety and Health Administration (OSHA) for that referenced standard.

**449.3.11.4** Nonmetallic sheathed cable or similar systems are not permitted for power and lighting wiring in any facility.

**449.3.11.5** Panel boards located in spaces subject to storage shall have the clear working space per Chapter 27, *Florida Building Code, Building*. "ELECTRICAL ACCESS - NOT FOR STORAGE" shall be permanently marked on the floor and wall about the panel. Panel boards shall not be located in an exit access corridor or in an unenclosed space or area that is    open to an exit access corridor. Panel boards may be located inside of a room or closet that opens into an exit access corridor only when the room or closet is separated from the exit access corridor by a partition and door that comply with this code.

**449.3.11.6** There shall be documentation for equipotential grounding in all patient care areas, building service ground electrode systems, lightning protection ground terminals and special systems such as fire alarm, nurse call, paging, generator, emergency power, fault analysis and breaker coordination.

**449.3.11.7** All spaces occupied by people, machinery and equipment within buildings and approaches to buildings shall have electric lighting.

**449.3.11.8** Operating rooms and delivery rooms shall have general lighting for the room in addition to local high intensity, specialized lighting provided by special fixtures at the surgical and obstetrical tables. Each special lighting unit for local lighting at the tables shall be connected to an independent circuit and shall be powered from the critical branch. A minimum of one general purpose lighting fixture shall be powered from a normal circuit in an operating room, delivery or similar room.

**449.3.11.9** There shall be a maximum of six duplex receptacles on a circuit in general patient care areas.

**449.3.11.10** The circuitry of all receptacles required by *The Guidelines* in critical care areas, in all emergency treatment rooms or areas, and other areas including, angiographic laboratories, cardiac catheterization laboratories, coronary care units, hemodialysis rooms or areas, human physiology laboratories, intensive care units and postoperative recovery rooms, shall be provided as follows:

**449.3.11.10.1** All electrical receptacles at the head of the bed shall be connected to the critical branch of the essential electrical system, except two of the required number shall be connected to a normal power circuit or to a critical branch circuit from a different transfer switch.

**449.3.11.10.2** There shall be no more than two duplex or four single receptacles per circuit.

**449.3.11.11** All receptacles shall have engraved cover plates to indicate the panel board and circuit numbers powering the device.

**449.3.11.12** Branch circuit over-current devices shall be readily accessible to nursing staff and other authorized personnel.

**449.3.11.13** The electrical system shall have coordinated short circuit protection.

**449.3.11.14** Provide color coding for the junction boxes for the branches of the essential electrical system.

**449.3.12 Fire alarm systems**. (Reference *The Guidelines* for other requirements.)

**449.3.12.1** **Fire Alarm Systems**. A fire alarm annunciator panel shall be provided at a 24-hour monitored location. The panel shall indicate the zone of actuation of the alarm, and there shall be a trouble signal indicator. Each smoke compartment shall be annunciated as a separate fire alarm zone. A fire alarm system zone shall not include rooms or spaces in other smoke compartments and shall be limited to a maximum area of 22,500 square feet (2090 m2).

**449.3.13 Nurse call system**. (Reference *The Guidelines* for other requirements.)

**449.3.13.1** A nurse call system shall be provided that will register a call from each patient bed to the nurse station and activate a visual signal at the patient room door and activate a visual and audible signal in the clean workroom, the soiled workroom, the nourishment station and the master station of the nursing unit. In multicorridor nursing units, additional visible signals shall be installed at corridor intersections in the vicinity of nurse stations. In rooms containing two or more calling stations, indicating lights shall be provided for each calling station.

**449.3.13.2** Master staff and duty stations may include volume controls, provided the minimum setting provides audibility of 15 decibels above normal ambient noise levels where the station is located.

**449.3.13.3** An emergency calling station of the pull cord type shall be provided and shall be conveniently located for patient use at each patient toilet, bath or shower room but not inside of the shower unless the nurse call device is listed for wet locations. The call signal shall be cancelled only at the emergency calling station. The emergency station shall activate distinctive audible and visual signals immediately.

**449.3.13.4** An emergency resuscitation alarm (Code Blue) calling station shall be provided for staff use in each operating, delivery, recovery LDR, LDRP, emergency, cardiac and intensive nursing care rooms, nurseries and similar rooms.

**449.3.13.5** A staff call station, or similar device, shall be located within each psychiatric seclusion room and shall be of hands free operation.

**449.3.13.6** The emergency resuscitative alarm panels (Code Blue) that receives the code call station signal, shall be located as required by *The Guidelines* and at other locations outside of the unit as determined by the facility that are staffed 24 hours per day. Audible signals may be silenced temporarily for a call provided subsequent calls automatically reactivate the audible signal immediately. The alarm panel at the 24-hour staffed station may indicate the nurse station/suite where the call originated in lieu of identifying the bed only when a 24-hour station is not one and the same as the attending nurse station.

**449.3.14 Emergency electric service.** (Reference *The Guidelines* for other requirements.)

**449.3.14.1** A Type 1 essential electrical system shall be provided in all hospitals as described in NFPA 99, Health Care Facilities. The emergency power for this system shall meet the requirements of a Level 1, Type 10, Class 48 generator as described in NFPA 110, Emergency Standby Power Systems.

**449.3.14.2** In new construction, the normal main service equipment shall be separated from the emergency distribution equipment by locating it in a separate room. Transfer switches shall be considered emergency distribution equipment for this purpose.

***Change Section 449.3.14.3 to read as shown:***

**449.3.14.3** Switches for critical branch lighting shall be totally separate from normal switching. ~~The devices or cover plates shall be of a distinctive color.~~ Critical branch switches may be adjacent to normal switches. Switches for life safety lighting are not permitted except as required for dusk-to-dawn automatic control of exterior lighting fixtures.

**449.3.14.4** The generator remote annunciator shall be located at a designated 24 hour staffed location.

**449.3.14.5** There shall be selected life safety lighting provided at a minimum of 1 footcandle (10 lux) and designed for automatic dusk-to-dawn operation along the travel paths from the exits to the public way or to safe areas located a minimum of 30 feet (9.144 m) from the building.

**449.3.14.6** A minimum of one elevator per bank serving any patient use floor shall be connected to the equipment branch of the essential electric system and arranged for manual or automatic operation during loss of normal power.

**449.3.14.7** If a day tank is provided, it shall be equipped with a dedicated low level fuel alarm and a manual pump. The alarm shall be located at the generator derangement panel.

**449.3.14.8** Transfer switch contacts shall be of the open type and shall be accessible for inspection and replacement.

**449.3.14.9** If required by the facility's emergency food plan, there shall be power connected to the equipment branch of the essential electrical system for kitchen refrigerators, freezers and range hood exhaust fans. Selected lighting within the kitchen and dry storage areas shall be connected to the critical branch of the essential electrical system.

**449.3.14.10** Outpatient surgery facilities, cardiac catherization facilities, or pain management facilities that utilize I.V. drip sedation located in a separate building or on another campus shall have a Type 1 essential electrical system in compliance with NFPA 99, Health Care Facilities. The emergency power for this system shall meet the requirements of a Level 1, Type 10, Class 8 generator as described in NFPA 110, Emergency Standby Power System.

**449.3.15 Lightning protection**.

**449.3.15.1** A lightning protection system shall be provided for all new buildings and additions in accordance with NFPA 780, Installation of Lightning Protection Systems.

**449.3.15.2** Where additions are constructed to existing buildings, the existing building's lightning protection system, if connected to the new lightning protection system, shall be inspected and brought into compliance with current standards.

**449.3.15.3** A lightning protection system shall be installed on all buildings in which outpatient surgical procedures, cardiac catherization procedures, or pain management procedures that utilize I.V. drip sedation are provided.

**449.3.15.4** There shall be surge protection for all normal and emergency electrical services.

**449.3.15.5** Additional surge protection shall be provided for all low voltage and power connections to all electronic equipment in critical care areas and life safety systems and equipment such as fire alarm, nurse call and other critical systems. Protection shall be in accordance with appropriate IEEE Standards for the type of equipment protected.

**449.3.15.6** All low-voltage system main or branch circuits entering or exiting the structure shall have surge suppressors installed for each pair of conductors and shall have visual indication for protector failure to the maximum extent feasible.

**449.4 Physical plant requirements for disaster preparedness of new hospital construction.**

**449.4.1 Definitions.** The following definitions shall apply specifically to all new facilities as used herein:

**449.4.1.1 "New facility"** means a hospital which has not received a Stage II Preliminary Plan approval from the Agency for Health Care Administration pursuant to this section.

**449.4.1.2** **"Net square footage"** means the clear floor space of an area excluding cabinetry and other fixed furniture or equipment;

**449.4.1.3 "During and immediately following"** means a period of 72 hours following the loss of normal support utilities to the facility.

**449.4.1.4** **"Occupied patient area(s)"** means the location of patients inside of the new facility or in the addition of a wing or floor to an existing facility during and immediately following a disaster. If these patients are to be relocated into an area of the existing facility during and immediately following a disaster, then for purposes of this code, that location will be defined as the "occupied patient area."

**449.4.1.5** **"Patient support area(s)"** means the area(s) required to ensure the health, safety and well-being of patients during and immediately following a disaster, such as a nursing station, clean and soiled utility areas, food preparation area, and other areas as determined by the facility to be kept operational during and immediately following a disaster.

**449.4.1.6** **"On-site"** means either in, immediately adjacent to, or on the campus of the facility, or addition of a wing or floor to an existing facility.

**449.4.2 Disaster preparedness construction standards.** The following construction standards are in addition to the physical plant requirements described in Sections 449.2 through 449.3. These minimum standards are intended to increase the ability of the facility to be structurally capable of serving as a shelter for patients, staff and the family of patients and staff and equipped to be self-supporting during and immediately following a disaster.

**449.4.2.1 Space standards**.

**449.4.2.1.1** For planning purposes, each new facility shall provide a minimum of 30 net square feet (2.79 m2) per patient served in the occupied patient area(s). The number of patients to be served is to be determined by the facility administrator.

**449.4.2.1.2** As determined by the facility, space for administrative and support activities shall be provided for use by facility staff to allow for care of patients in the occupied patient area(s).

**449.4.2.1.3** As determined by the facility, space shall be provided for staff and family members of patients and staff.

**449.4.2.2 Site standards.**

**449.4.2.2.1** Except as permitted by Section 1612 of this code, the lowest floor of all new facilities shall be elevated to the Base Flood Elevation as defined in Section 1612 of this code, plus 2 feet, or to the height of hurricane Category 3 (Saffir-Simpson scale) surge inundation elevation, as described by the Sea, Lake, and Overland Surge (SLOSH) from Hurricanes model developed by the Federal Emergency Management Agency (FEMA), United States Army Corps of Engineers (USACE), and the National Weather Service (NWS), whichever is higher.

**449.4.2.2.2** For all existing facilities, the lowest floor elevations of all additions, and all patient support areas including food service, and all patient support utilities, including mechanical, and electrical (except fuel storage as noted in Section 449.4.2.9.3 of this code) for the additions shall be at or above the elevation of the existing building, if the existing building was designed and constructed to comply with either the site standards of section 449.4 of this code or local flood resistant requirements, in effect at the time of construction, whichever requires the higher elevation, unless otherwise permitted by Section 1612 of this code. If the existing building was constructed prior to the adoption of either the site standards of 449.4 of this code or  local flood resistant requirements, then the addition and all patient support areas and utilities for the addition as described in this section shall either be designed and constructed to meet the requirements of Section 449.4.2.2.1 of this code or be designed and constructed to meet the dry flood proofing requirements of Section 1612 of this code.

**449.4.2.2.3** Substantial improvement, as defined by Section 1612 of this code, to all existing facilities located within flood areas as defined in Section 1612 of this code or within a Category 3 surge inundation zone as described in Section 449.4.2.2.1 of this code, shall be designed and constructed in compliance with Section 1612 of this code.

**449.4.2.2.4** Where an off-site public access route is available to the new facility at or above the base flood elevation, a minimum of one on-site emergency access route shall be provided that is located at the same elevation as the public access route.

**449.4.2.2.5** New landscaping elements shall be located so if damaged they will not block the on-site emergency access route to the facility. Outdoor signs and their foundations shall be designed to meet the wind load criteria of the *Florida Building Code, Building.*

**449.4.2.2.6** New light standards and their foundations used for lighting the on-site emergency access route shall be designed to meet the wind load criteria of ASCE 7 with wind speeds determined from Figure 26.5-1B with appropriate exposure category dependent on site location.

**449.4.2.3 Structural standards.** Wind load design of the building structure and exterior envelope including exterior wall systems shall be designed in accordance with the code.

**449.4.2.4 Roofing standards.**

**449.4.2.4.1** Roofing membrane material shall resist the uplift forces specified in the code. Roof coverings shall be installed according to the specifications provided by the manufacturer.

**449.4.2.4.2** Loose-laid ballasted roofs shall not be permitted.

**449.4.2.4.3** All new roof appendages such as ducts, tanks, ventilators, receivers, dx condensing units and decorative mansard roofs and their attachment systems shall be structurally engineered to meet the wind load requirements of the applicable building code. All of these attachment systems shall be connected directly to the underlying roof structure or roof support structure.

**449.4.2.5 Exterior unit standards.**

**449.4.2.5.1** All exterior window units, skylights, exterior louvers and exterior door units including vision panels and their anchoring systems shall be impact resistant or protected with an impact resistant covering meeting the requirements of the  Testing Application Standards (TAS) 201, 202, and 203 of this code in accordance with the requirements of Sections 1626.2 thru 1626.4 of this code. The impact resistant coverings may be either permanently attached or may be removable if stored on site of the facility.

**449.4.2.5.2** The location or application of exterior impact protective systems shall not prevent required exit egress from the building.

**449.4.2.5.3** When not being utilized to protect the windows, the permanently attached impact resistant coverings shall not reduce the percentage of the clear window opening below that required by this code for the patient room.

**449.4.2.6 Heating, ventilation and air-conditioning (HVAC) standards.**

**449.4.2.6.1** All new air-moving equipment, dx condensing units, through-wall units and other HVAC equipment located outside of, partially outside of, or on the roof of the facility and providing service to the new facility shall be permitted only when either of the following are met:

**449.4.2.6.1.1** They are located inside a penthouse designed to meet the wind load requirements of the *Florida Building Code, Building*; or

**449.4.2.6.1.2** Their fastening systems are designed to meet the wind load requirements of the *Florida Building Code, Building* and they and all associated equipment are protected as required by TAS 201,202, and 203 in accordance with the requirements of Sections 1626.2 thru 1626.4 of this code from damage by horizontal impact by a separate and independent structure that allows access to all parts of the equipment at all times or

**449.4.2.6.1.3** They are completely protected by the equipment shrouding that meets the requirements of TAS 201, 202, and 203 in accordance with the requirements of Sections 1626.2-1626.4 of this code.

**449.4.2.6.2** All occupied patient areas and patient support areas shall be supplied with sufficient HVAC as determined by the facility to ensure the health, safety and well-being of all patients and staff during and immediately following a disaster.

**449.4.2.6.3** As determined by the facility these selected HVAC systems and their associated support equipment such as a control air compressor essential to the maintenance of the occupied patient and patient support area(s) shall receive their power from the emergency power supply system(s).

**449.4.2.6.4** Ventilation air change rates in occupied patient areas shall be maintained as specified in this section during and immediately following a disaster by connection to the essential electrical system.

**449.4.2.6.5** Auxiliary equipment and specialties such as hydronic supply piping and pneumatic control piping shall be located, routed and protected in such a manner as determined by the facility to ensure the equipment receiving the services will not be interrupted.

**449.4.2.7 Plumbing standards.**

**449.4.2.7.1** There shall be an independent on-site supply (i.e., water well) or on-site storage capability (i.e., empty water storage containers or bladders) of potable water at a minimum quantity of 3 gallons (14 L) per in-patient in the new facility or wing or floor addition to an existing facility per day during and immediately following a disaster. For planning purposes the number of in-patients shall be determined in writing by the facility. Hot water in boilers or tanks shall not be counted to meet this requirement.

**449.4.2.7.2** There shall be an independent onsite supply or storage capability of potable water at a minimum quantity of 1 gallon (3.7 L) per facility staff, and other personnel in the new facility or wing or floor addition to an existing facility per day during and immediately following a disaster. For planning purposes, the number of these personnel shall be determined in writing by the facility. Hot water in boilers or tanks shall not be counted to meet this requirement.

**449.4.2.7.3** The facility shall determine what amount of water will be sufficient to provide for patient services, and shall maintain an on-site supply or on-site storage of the determined amount.

**449.4.2.7.4** When utilized to meet the minimum requirements of this rule, selected system appurtenances such as water pressure maintenance house pumps, and emergency water supply well pumps shall take power from the emergency power supply system(s).

**449.4.2.8 Medical gas systems standards**. The storage, distribution piping system and appurtenances serving the occupied patient area(s) and patient support area(s) shall be contained within a protected area(s) designed and constructed to meet the structural requirements of the code and debris impact requirements as specified by Sections 1626.2 through 1626.4.

**449.4.2.9 Emergency electrical generator and essential electrical system standards.**

**449.4.2.9.1** There shall be an on-site Level 1 emergency electrical generator system designed to support the occupied patient area(s) and patient support area(s) with at least the following support services:

**449.4.2.9.1.1** Ice-making equipment to produce ice for the patients served, or freezer storage equipment for the storage of ice for the patients served.

**449.4.2.9.1.2** Refrigerator unit(s) and food service equipment if required by the emergency food plan.

**449.4.2.9.1.3** At a minimum, there shall be one clothes washer and one clothes dryer for laundry service.

**449.4.2.9.1.4** Selected HVAC systems as determined by the facility and other systems required by this code.

**449.4.2.9.1.5** Electric lighting required to provide care and service to the patient occupied areas and the necessary patient support areas shall be connected to the essential electrical system**.**

**449.4.2.9.2** The emergency generator system shall be fueled by a fuel supply stored on-site sized to fuel the generator for 100 percent load for 64 hours or 72 hours for actual demand load of the occupied patient area(s) and patient support area(s) and patient support utilities during and immediately following a disaster, whichever is greater.

**449.4.2.9.3** The fuel supply shall either be located below ground or contained within a protected area that is designed and constructed to meet the structural requirements of the code and debris impact requirements of Sections 1626.2 through 1626.4. If an underground system is utilized, it shall be designed so as to exclude the entrance of any foreign solids or liquids.

**449.4.2.9.4** All fuel lines supporting the generator system(s) for the occupied patient area(s) and patient support area(s) shall be protected also with a method designed and constructed to meet the structural requirements of the code and debris impact requirements of Sections 1626.2 through 1626.4.

***Change Section 449.4.2.9.5 to read as shown:***

**449.4.2.9.5** All panel boards, transfer switches, disconnect switches, enclosed circuit breakers or emergency system raceway systems required to support the occupied patient area(s), patient support area(s) or support utilities shall be contained within a protected area(s) designed and constructed to meet the structural requirements of the code and debris impact requirements of Sections 1626.2 through 1626.4, and shall not rely on systems or devices outside of this protected area(s) for their reliability or continuation of service. The equipment system shall be kept entirely independent of all other wiring and equipment and shall not enter the same raceways, boxes, or cabinets with other wiring.

**449.4.2.9.6** The emergency generator(s) shall be air or self-contained liquid cooled and it and other essential electrical equipment shall be installed in a protected area(s) designed and constructed to meet the structural requirements of the code and debris impact requirements of Sections 1626.2 through 1626.4.

**449.4.2.9.7** If the facility does not have a permanent onsite optional stand-by generator to operate the normal branch electrical system, there shall be a permanently installed predesigned electrical service entry for the normal branch electrical system that will allow a quick connection to a temporary electrical generator. This quick connection shall be installed inside of a permanent metal enclosure rated for this purpose and may be located on the exterior of the building.

**449.4.2.10 Fire protection standards.**

**449.4.2.10.1** If the facility requires fire sprinklers as part of its fire protection, either of the following shall be met:

**449.4.2.10.1.1** On-site water storage capacity to continue sprinkler coverage, in accordance with the requirements of NFPA 13, Sprinkler Systems, or a fire watch, conducted in accordance with the requirements of Chapter 59A-3.081(a), *Florida Administrative Code.*

**449.4.2.10.2** If the facility provides a fire watch in lieu of water storage to continue sprinkler coverage, then one 4-A type fire extinguisher or equivalent shall be provided for every three or less 2-A fire extinguishers required by NFPA 10, Portable Extinguishers. These additional extinguishers shall be equally distributed throughout the area they are protecting.

**449.4.2.11** **External emergency communications standards.** (Reference Chapter 59A-3.081 *Florida Administrative Code* for requirements.)

***Section 450 – Nursing Homes***

***Add Florida specific requirements from Section 420 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 450**

**NURSING HOMES**

**450.1 Scope.** All newly licensed or newly constructed nursing homes and all additions, alterations or renovations to an existing licensed nursing home shall comply with all applicable requirements of this code and the minimum standards of design, construction and specified minimum essential utilities and facilities of this Section and shall have plans reviewed and construction surveyed by the state agency authorized to do so by Chapter 553.80 (1)(c), *Florida Statutes* to assure compliance with all applicable requirements of this code.

**450.1.1** A change of ownership of an existing licensed nursing home shall not require compliance with this Section.

**450.1.2** A facility licensed as a nursing home that only admits children 0 years through 20 years of age shall meet these minimum standards as they are required by the functional program of the facility. This functional program shall be developed in accordance with the requirements of The *Guidelines* as referenced in section 450.2.2 of this code.

**450.1.3** The Florida Building Code, Existing Buildings, Section 101.2 “Scope” exempts state licensed nursing homes from compliance with that code. Any repair, alteration, change of occupancy, addition and relocation of an existing state licensed nursing home shall comply with the applicable requirements of this code and this Section.

**450.1.4** For project submission and fee requirements, codes and standards for existing facilities, and other administrative, licensure, and programmatic provisions for nursing homes, see Agency for Health Care Administration [AHCA] Chapter 59A-4, *Florida Administrative Code* (F.A.C.) and Chapter 400 Part II, *Florida Statutes*.

**450.1.5** For state licensure purposes, these codes and standards shall be applicable to the project on the effective date of this code at the time of preliminary plan approval by the Agency for Health Care Administration (the Agency) or at the first construction document review if there has been no previous preliminary plan approval for that project.

**450.2 Additional codes and standards for the design and construction of nursing homes.** In addition to the minimum design and construction standards required by Section 450 of this code, Chapter 59A-4, “*Minimum Standards for Nursing Homes”,* *Florida Administrative Code* or by Chapter 400 Part II, *Florida Statutes*, the following codes and standards shall also be met on the effective date of this code as described in Section 450.1.5 of this code:

**450.2.1** The fire codes described in Chapter 69A-53, “*Uniform Fire Safety Standards for Hospitals and Nursing Homes”*, *Florida Administrative Code*.

**450.2.2** *The Guidelines for Design and Construction of Health Care Facilities* (*The Guidelines*), Part 1 “*General”* and Part 6 “*Ventilation of Health Care Facilities”* as referenced in Chapter 35 of this code.

**450.3 Additional physical plant requirements for nursing homes.** In addition to the codes and standards referenced in Section 450.2 of the this code, the following minimum standards of construction and specified minimum essential facilities, shall apply to all new nursing homes, and all additions, alterations or renovations to an existing licensed nursing home, as described in Section 450.1 of this code and listed in Section 450.3 of the this code.

**450.3.1 Alternate design models**. Because nursing homes may provide care utilizing two basic organizational models, two alternate design models are permitted to meet some of specific physical plant requirements of this Section. These alternate design models, the institutional design model and the household design model for person centered care, are described in Sections 450.3.2.1 and 450.3.2.2 of this code and are further defined by the physical plant requirements for each model as described in the applicable paragraphs of Section 450.3 of this code.

**450.3.1.1** Either one or both of these design models may be used in the design of the nursing home as described by the functional program of the facility.

**450.3.1.2** An institutional design model may utilize specific physical plant requirements of a household design model without being required to incorporate all of the household design elements.

**450.3.1.3** Where no alternate design model is permitted, all nursing homes shall meet the described requirement.

**450.3.2 Resident unit.** Each resident unit shall consist of the resident rooms and support areas, and shall be arranged to avoid unnecessary and unrelated travel through the unit. It shall be designed to meet the organizational patterns of staffing, functional operations, and care programs as described in the functional program of the facility. Based on these aspects of the functional program, the resident unit may be designed to meet one of the following models:

**450.3.2.1 Institutional design model.** This model is based on an institutionalized medical program similar in arrangement to that found in some hospitals. If this model is utilized for the design of the resident unit, it shall consist of the resident rooms, nurse station(s), and resident support areas and services as described in section 450.3.4.1 Dining, activity, and social areas may be centralized and located away from the resident unit.

**450.3.2.1.1** Each resident unit shall be limited to a maximum of 60 beds.

**450.3.2.1.2** Travel distance from the entrance to a nurses' station, and from a clean utility and a soiled utility room(s) or function(s) to the middle of the entrance door of the farthest resident room served shall be a maximum of 150 feet (45.72 m).

**450.3.2.2** **Household design model for person centered care.** This model is based on a home like environment similar in arrangement to that found in a typical home. If this model is utilized for the design of the resident unit, it shall consist of the resident rooms and resident support areas and services as described in section 450.3.4.2. Dining, activity, and social areas shall be decentralized and included within the resident household.

**450.3.2.2.1** Each resident household (unit) shall be limited to a maximum of 20 residents.

**450.3.2.2.2** Two individual resident households (units) may be grouped into a distinct neighborhood with a maximum of 40 residents. This neighborhood, composed of the two resident households, may share the required resident support areas and services as described in Sections 450.3.4.2 of this code.

**450.3.2.2.3** If an access corridor is utilized as part of this design, it shall be designed to include an open resident sitting and resting area(s) located along the corridor at least every 100 feet (30.48 m) of corridor length.

**450.3.3 Resident rooms.** Each resident room shall meet the following minimum standards:

**450.3.3.1** In new construction and additions, the maximum room capacity of each resident room shall be two persons.

**450.3.3.2** Nursing homes designed to serve only for children 0 through 20 years of age may have a maximum room capacity of four persons.

**450.3.3.3** Where renovation work of an existing resident room alters the physical configuration of the room and the present capacity of the room is more than two persons, the maximum room capacity shall be no more than two persons at the conclusion of the renovation.

**450.3.3.4** Each resident room shall have a minimum of 100 square feet (9.29 m2) of clear floor area per bed in a double occupancy resident room and 120 square feet (11.15 m2) of clear floor area in a single occupancy resident room, exclusive of the space consumed by the toilet room, closet(s), wardrobe(s), lavatory (ies), alcove(s), and either the space for the door swing(s) into the room or the space for entrance vestibule, whichever is greater. For the purpose of determining the minimum clear floor area, the entrance vestibule is defined as that floor area located between the room entrance door and the room floor area containing the resident bed(s).

**450.3.3.5** Where renovation work is undertaken that alters the room configuration, every effort shall be made to meet these minimum space standards. When this is not possible due to existing physical conditions or constraints, and with the approval of the Agency, a resident room shall have no less than 80 square feet (7.43 m2) of clear floor area per bed in a double occupancy resident room and 100 square feet (9.29 m2) of clear floor area in a single occupancy resident room. Clear floor area is as described in section 450.3.3.4.

**450.3.3.6** For planning purposes, a full-size bed is assumed to be 3 feet 6 inches (1.07 m) wide by 8 feet (2.43 m) long.

**450.3.3.7** A 3 feet (0.91 m) wide clear access space to each bed shall be provided along at least 75 percent of the length of one side of the bed and shall be designed to allow access for the use of a wheelchair and other portable equipment.

**450.3.3.8** For a bed equipped with a piped in medical gas headwall unit, there shall be a minimum of 3 feet clearance (0.91 m) along the entire length of the bed between both sides and foot of the bed and any other bed, wall or any other fixed obstruction.

**450.3.3.9** The dimensions and arrangement of each resident room shall be such that at least two bed locations are designed to accommodate resident personal choice. All such alternate bed locations shall meet the clearance requirements of section 450.3.3.7 and shall be designed so the bed will not obstruct access to the supporting utilities serving the bed including the nurse call station, individual reading lamp or fixture, and the required electrical outlets that provide service for the bed or other equipment. In a double occupancy resident room, only one bed must meet this requirement and any bed equipped with a piped in medical gas headwall unit shall meet Section 450.3.3.8 and is exempt from this requirement.

**450.3.3.10** The configuration of each resident room shall be designed to meet one of the following models:

**450.3.3.10.1** **Institutional design model.** If a double occupancy resident room is designed where the beds are located side by side, there shall be a minimum clearance of 3 feet (0.91 m) between both sides of each bed and any wall or any other fixed furniture, fixed obstruction or adjacent bed for at least 75% of the length of the bed, and a clearance of 3 feet 8 inches (1.11 m) to any fixed furniture, fixed obstruction, or adjacent bed at the foot of each bed to permit the passage of equipment or beds.

**450.3.3.10.1.1** At a minimum visual privacy shall be provided for each person by the installation of flame-retardant cubicle curtains or equivalent built-in devices.

**450.3.3.10.1.2** The design for privacy shall not restrict resident access at any time to the room entrance, resident armchair, toilet or bathroom, wardrobe, or closet.

**450.3.3.10.2 Household design model for person centered care**. Individual resident sleeping areas in a double occupancy resident room shall be separated from each other by a full height wall or a permanently installed sliding or folding door or partition that provides visual privacy for each person.

**450.3.3.10.2.1** Either doors or cubicle curtains to these individual resident sleeping areas shall be provided.

**450.3.3.10.2.2** The design for privacy shall not restrict resident access at any time to the room entrance, resident armchair, toilet room, bathroom, window, wardrobe, or closet.

**450.3.3.11** Each resident room shall be provided with a bedside table or equivalent furniture, a reading lamp, a well constructed appropriate bed, and a non-folding type armchair for each individual resident. As determined by the functional program of the facility, there shall be a number of over-bed tables available to bed restricted residents.

***Change Section 450.3.3.12 to read as shown:***

**450.3.3.12** Each new resident room, and each individual resident sleeping area as described in Section 450.3.3.10.2, shall have an exterior window(s) to the outside that is physically accessible to each resident at all times and visible from the resident’s bed except when a cubicle curtain is closed. The window shall be sized with a clear opening of 8 percent of the gross square footage of the resident sleeping room or individual resident sleeping area as described in section 450.3.3.10.2. The clear opening of the window width and height shall have a minimum of 20 feet (6.10 m) unobstructed vista to any permanent structure, or equipment, and 15 feet (4.57 m) unobstructed vista to any vehicular driveway or property line measured horizontally ~~perpendicularly~~ from the plane of the window.

**450.3.3.13** A hand-washing facility complete with mixing faucet shall be provided within each resident toilet room and within each resident room that shares a toilet room with another resident room. Separate resident sleeping areas as described in Section 450.3.3.10.2 do not constitute a separate resident room.

***Change Section 450.3.3.14 to read as shown:***

**450.3.3.14** Each resident shall have access to a toilet room without having to enter the general corridor area or another resident bed area in a double occupancy resident room. One toilet room shall serve no more than two residents and no more than two resident rooms. ~~If required by the functional program of the facility, a~~ A plumbing connection for a ~~bedpan-~~rinsing device shall be provided at the resident toilet within each resident toilet room unless the functional program provides a method for disposing of bedpans, urinals, and emesis basins after each and every use and is approved by AHCA.

**450.3.3.15** The door to the toilet room shall be side hinged, and either swing out from the toilet room or be equipped with emergency release hardware. A sliding door equipped with sliding door hardware located on the resident room side of the wall and not equipped with a bottom door track shall be permitted. Unless otherwise required by this code, the door shall be at least 32 inches (813 mm) in clear width opening. The toilet room door that swings open into the resident room shall not impede the swing of any other door that opens into the resident room.

**450.3.3.16** Each resident room shall be provided with a wardrobe or closet for each resident. Each wardrobe or closet shall have minimum inside dimensions of 1 foot 10 inches (0.55 m) in depth by 2 feet 6 inches (0.5 8 m) in width. Each wardrobe or closet shall be accessible to the resident at all times and shall have an adjustable shelf(s) and an adjustable clothes rod that is adjustable in a maximum of 4 inches (10.16 cm) increments from 4 feet (1.22 m) to 5 feet 8 inches (1.73 m) above finished floor or higher as wardrobe or closet size permits. When the wardrobe or closet is designed to meet the requirements for accessibility per the *Florida Building Code, Accessibility*, it shall include additional accessible storage area(s) for full-length garments. The shelf may be omitted if the clothing unit provides at least two drawers. Locked storage for a resident’s personal items shall be provided within the resident sleeping room if required by the functional program.

**450.3.4 Resident support areas and services.** The size and features of each resident support area will depend upon the number and type of residents served. The resident support areas shall be located inside of or readily accessible to each resident unit. The support areas and services shall be designed in accordance one of the following design models.

**450.3.4.1** **Institutional design model:**

**450.3.4.1.1** Staff work area(s) (nurse station). A central and/or decentralized staff work area(s) shall be provided. Where a centralized staff work model is utilized it shall have space for supervisory administrative work activities, charting, and storage. The minimum area required shall be equal to 2 square feet (0.19 m2) for each resident bed served. Where a decentralized staff work model is utilized it shall provide for charting or transmitting charted data and for any storage of administrative activities.

**450.3.4.1.2** A clean utility or clean holding room for storage and distribution of clean supply materials shall be provided. If the room is used for preparing resident care items, it shall contain a work counter, a hand-washing facility, and storage facilities for clean and sterile supplies. If the room is used only for storage and holding as a part of a system for distribution of clean and sterile supply materials, the work counter and hand-washing facility requirements may be omitted. The minimum size of the room shall be 60 square feet (5.57 m2).

**450.3.4.1.3** A clean linen storage room, closet or area shall be provided. This area may be located within the clean utility or clean holding room. It shall be large enough to accommodate the storage of linen carts. If in compliance with the *Florida Fire Prevention Code* a closed-cart system may be used and stored in an alcove open to the corridor.

**450.3.4.1.4** A soiled utility or soiled holding room(s) shall be provided. The soiled utility function shall be comprised of a flushing rim clinical service sink or deep bowl utility fixture with bedpan rinsing device, a double compartment sink, soiled linen receptacles, waste receptacles and a work counter with a usable minimum work surface area of 6 square feet (0.56 m2). The total minimum size of the function shall be 80 square feet (7.43 m2) and may be allocated among several soiled utility or soiled holding rooms. Rooms used only for the holding of soiled materials need contain only a hand washing facility.

**450.3.4.1.5** **Medication storage and distribution**. A medicine preparation room or a self-contained medicine dispensing unit shall be provided for the provision of medication storage and distribution.

**450.3.4.1.5.1** If a medicine preparation room is utilized, it shall be equipped with a lockable door, have a minimum area of 50 square feet (4.55 m2) and shall contain a refrigerator, locked storage for controlled drugs, a hand washing facility, and a work counter with a minimum of 6 square feet (0.56 m2) of work surface.

**450.3.4.1.5.2** If a self-contained medicine dispensing unit is utilized, it shall be under the visual control of the staff and may be located at the nurses' station, in the clean utility room, in an alcove, or in other spaces convenient for staff control provided the area occupied by the unit does not encroach upon required minimum areas. The dispensing unit may be used in a medicine preparation room as locked storage for controlled drugs within the minimum area of 50 square feet (4.55 m2); however, the standard "cup sinks" provided in many self-contained units shall not be a substitute for the required hand-washing facility.

**450.3.4.1.5.3** If there is no linen storage in the clean utility room, medicine preparation may be part of the clean utility room in which case an additional 20 square feet (1.8 m2) dedicated for this purpose shall be required. A refrigerator shall also be required if medicine preparation is included in this room.

**450.3.4.1.6** A nourishment room for serving nourishments between meals shall be provided that shall contain a work counter, refrigerator, storage cabinets, and sink.

**450.3.4.1.6.1** Ice for residents' consumption shall be provided by an icemaker unit that may serve more than one nourishment station if the nourishment stations are in close proximity to each other. Where the icemaker unit is accessible to residents or the public, it shall be a self-dispensing type.

**450.3.4.1.6.2** The nourishment room shall include space for trays and dishes used for nonscheduled meal service. Hand-washing facilities shall be in or immediately accessible from the nourishment room.

**450.3.4.2** **Household design model for person centered care**:

**450.3.4.2.1** The functions of administrative work, charting and storage may be located among several separate direct care staff work areas located within the resident household. The administrative work area(s) shall be designed and located so it is not visually or physically separated from the normal use areas of residents and family members.

**450.3.4.2.2** A clean utility or clean holding room as described in section 450.3.4.1.2 shall be provided but may be sized in accordance with the functional program and allocated among several rooms or closets within the resident household.

**450.3.4.2.3** A clean linen storage room, closet or area shall be provided in accordance with section 450.3.4.1.3 and shall be located within the resident household.

**450.3.4.2.4** A soiled utility or soiled holding room as described in section 450.3.4.1.4 shall be provided but may be sized in accordance with the functional program and allocated among several rooms or closets within the resident household.

**450.3.4.2.5** A medicine preparation room or a self-contained medicine dispensing unit as described in section 450.3.4.1.5 shall be provided. Non-controlled prescription drugs may be stored inside the resident’s sleeping room, area, or toilet room if they are secured inside of an automatic closing and automatic locking dispensing unit that is secured in place.

**450.3.4.2.6** A nourishment room as described in section 450.3.4.1.6 shall be provided but resident dietary facilities as described in section 450.3.8.1.13 may substitute for this function.

**450.3.4.3** The following resident support areas, utilities, or services shall be provided in all nursing homes. Unless specifically required, these support areas may be either within the nursing unit, adjacent to the nursing unit or on the same floor as the nursing unit.

**450.3.4.3.1** An equipment storage room(s) shall be provided for storage of nursing unit equipment. The minimum area required shall be equal to 2 square feet (.19 m2) for each resident, with no room being less than 20 square feet (1.86 m2) in area.

**450.3.4.3.2** A housekeeping room(s) shall be provided for storage and use of housekeeping supplies and equipment.

**450.3.4.3.3** If required by the functional program of the facility, a hot water or chemical type sanitizer shall be provided per facility.

**450.3.4.3.4** Storage alcove space for a wheelchair(s) shall be provided in an area located out of the required means of exit egress.

**450.3.4.3.5 Resident bathing facilities.**

**450.3.4.3.5.1** A centralized resident bathing room(s) shall be provided with a minimum of one bathtub, hydro tub, or shower for every 20 residents or fraction thereof not otherwise served by bath or shower facilities connected directly to the resident rooms

**450.3.4.3.5.2** A separate private toilet room shall be provided that is directly accessible to each central bathing area with multiple bathing fixtures without requiring entry into the general corridor. This toilet may also serve as a toilet training facility.

**450.3.4.3.5.3** All showers located in bathing rooms connected directly to the resident rooms shall be designed so that a shower chair can be easily rolled in and out of the shower area.

***Change Sections 450.3.4.3.5.4*** *-* ***450.3.4.3.5.5******to read as shown:***

**450.3.4.3.5.4** If the Institutional design model is utilized, in addition to bathing facilities connected to the resident rooms, residents shall have access to at least one bathing room per floor or unit sized to permit assisted bathing in a tub or shower. The bathtub in this room shall be accessible to residents in wheelchairs and if a shower is used it shall be large enough to accommodate a person in a recumbent position. Other tubs or showers located within the bathing room shall be located inside of individual rooms or curtained enclosures with space for private use of the bathing fixture, for drying and dressing and access to a grooming location containing a sink, mirror and counter or shelf. If every resident sleeping room has a bathing room directly connected to it that is equipped with a 3 feet (.914 meters) x 5 feet (1.52 meters) roll in shower, the central bathing room shall be as required by the functional program.

**450.3.4.3.5.5** If the household design model for person centered care is utilized, in addition to the bathing facilities connected to the resident rooms, residents within each household shall have access to at least one bathing room located in or directly adjacent to the household and sized to permit assisted bathing in a tub or shower. This bathing room may be shared between two households if it is located so that it is directly adjacent to each household. The bathtub in this room shall be accessible to residents in wheelchairs and if a shower is used it shall be large enough to accommodate a person in a recumbent position. Other tubs or showers located within the bathing room shall be located inside of individual rooms or curtained enclosures with space for private use of the bathing fixture, for drying and dressing and access to a grooming location containing a sink, mirror and counter or shelf. If every resident sleeping room has a bathing room directly connected to it that is equipped with a 3 feet (.914 meters) x 5 feet (1.52 meters) roll in shower, the central bathing room shall be as required by the functional program.

**450.3.5 Resident living, social, and treatment areas.**

**450.3.5.1** Dining, lounges, recreation areas, and social areas for residents shall be provided. The total area of these spaces shall be a minimum of 35 square feet (3.25 m2) per bed with a minimum total area of 225 square feet (20.90 m2). At least 20 square feet (1.86 m2) per resident shall be available for dining. Additional space may be required for resident day care programs. Storage for supplies and equipment shall be provided in the recreation area.

**450.3.5.1.1** If the institutional design model is utilized, these areas may be grouped together and centrally located.

**450.3.5.1.2** If a household design model for person centered care is utilized, these areas shall be decentralized and provided within each resident household or can be shared between a maximum of two households.

**450.3.5.1.3** Storage for supplies, resident needs, and recreation shall be provided. This area shall be on site but not necessarily in the same building as the resident rooms, provided access is convenient. The minimum required area shall be 5 square feet (0.46 m2) per bed up to 600 square feet (55.74 m2).

**450.3.5.2** Outdoor area(s) shall be provided for the use of all residents and shall include walking paths of durable materials, benches, shaded areas, and visual focusing element(s) such as landscaping, sculpture, or fountain(s). Security fencing if used shall be of a residential design and provide some visual connection to the exterior of the secured area. If an exterior visual connection is not possible or desirable than the interior of the outside area shall be landscaped to be visually interesting.

**450.3.5.3** If required by the functional program of the facility, physical, speech, and occupational therapy units shall be provided and contain the following.

**450.3.5.3.1** Space for files, records and administrative activities.

**450.3.5.3.2** Provisions for storage of wheelchairs.

**450.3.5.3.3** Storage for supplies and equipment.

**450.3.5.3.4** Hand-washing facilities within the therapy unit.

**450.3.5.3.5** Space and equipment for carrying out each of the types of therapy that the facility will provide.

**450.3.5.3.6** Provisions for resident privacy.

**450.3.5.3.7** Housekeeping rooms, in or near the unit.

**450.3.5.3.8** Resident toilet room(s) usable by wheelchair residents.

**450.3.5.4** A barber/beauty room shall be provided with facilities and equipment for resident hair care and grooming. The area of the room shall be a minimum of 120 square feet (11.15 m2) with the least dimension of 10 feet (3.05 m).

**450.3.6 Staff support areas.**

**450.3.6.1** If required by the functional program of the facility, a staff lounge area(s) shall be provided. It may be shared by multiple resident units if the lounge is located so it is accessible without requiring the user to enter into or through any other resident unit.

**450.3.6.2** A staff toilet room with hand-washing facilities shall be provided conveniently located to each resident unit.

**450.3.6.3** Lockable closets, drawers or compartments shall be provided on the resident unit for staff and may be located in the lounge for safekeeping of staff personal effects.

**450.3.6.4** A conference or consultation room for resident and family use shall be provided and may be shared between resident units.

**450.3.7 Administrative and public area.** Each administrative and public area shall meet the following standards:

**450.3.7.1** A covered vehicular drop-off and pedestrian entrance that is located at grade level and that provides shelter from inclement weather shall be provided.

**450.3.7.2** An administrative/lobby area shall be provided that shall include a counter or desk for reception and information, a public waiting area. This function may be located in a separate building on the campus of the facility. Public toilet facilities, public telephone and an electric drinking fountain for this area shall be provided in accordance with the *Florida Building Code, Plumbing*. Residents shall have access to toilet facilities in public areas.

**450.3.7.3** General offices shall be provided for business transactions, admissions, social services, private interviews, medical and financial records, and administrative and professional staff. Clerical files and staff office space shall be provided as needed. At a minimum there shall be a private office for the administrator and director of nursing.

**450.3.7.4** At least one multipurpose room per nursing home facility shall be provided for conferences, meetings, and health education purposes, and shall include provisions for the use of visual aids. This room may be remotely located on the campus and shall have a minimum area of 120 square feet (11.15 m2).

**450.3.7.5** Storage for office equipment and supplies shall be provided.

**450.3.8 Facility support areas.** Each facility support area shall meet the following standards.

**450.3.8.1 Facility Dietary**. A facility dietary area shall be provided for dietary service to residents and others as may be appropriate. No part of the kitchen area may be used as a pass through to the linen/laundry area. The facility dietary area shall contain the following facilities, in the size and number appropriate for the type of food service selected:

**450.3.8.1.1** Storage space, including cold storage, for at least a seven-day supply of food shall be provided.

**450.3.8.1.2** Food preparation facilities for cook to serve, cook to chill or a proprietary system of food preparation and adequate space and equipment for production shall be provided.

**450.3.8.1.3** Employee dining and serving lines shall not be permitted in the dietary facilities area.

**450.3.8.1.4** Hand-washing facilities shall be conveniently located in the food preparation area.

**450.3.8.1.5** Facilities for assembly and distribution of resident meals shall be provided.

**450.3.8.1.6** Ware washing space shall be located in a room or an alcove separate from the food preparation and serving area. Commercial-type ware washing equipment shall be provided. Space shall also be provided for receiving, scraping, sorting, and stacking soiled tableware and for transferring clean tableware to the use areas. Convenient hand washing facilities shall be available on the soiled dish side of the ware washing area.

**450.3.8.1.7** Pot washing facilities shall be provided.

**450.3.8.1.8** Storage areas and cleaning facilities for cans, carts, and mobile-tray conveyors shall be provided.

**450.3.8.1.9** An office for the food service manager shall be provided.

**450.3.8.1.10** A toilet, hand-washing facility and lockers for dietary staff shall be located within the dietary facilities area. A vestibule shall be provided between the toilet and the kitchen.

**450.3.8.1.11** A housekeeping room located within the dietary facilities area shall be provided and shall include a service sink and storage space for housekeeping equipment and supplies.

**450.3.8.1.12** An icemaker unit shall be provided and may be located in the food preparation area or in a separate room.

**450.3.8.1.13** If the household design for person centered care model is utilized and if required by the functional program, a resident dietary area including cooking equipment, counter tops, kitchen sink, and storage areas shall be provided within the resident household for the use by staff, residents, and family. The cooking equipment shall be designed or secured in such a way to insure resident safety and shall meet all applicable fire safety codes. This dietary area may substitute for the nourishment requirement of section 450.3.4.2.5.

**450.3.8.2 Facility laundry.** A facility laundry area shall be provided that shall have provisions for the storing and processing of clean and soiled linen for appropriate resident care. Processing may be done within the facility, in a separate building on or off site, or in a commercial or shared laundry. Where soiled linen is processed as part of a facility laundry area, at a minimum, the following elements shall be included:

**450.3.8.2.1** A separate room for receiving and holding soiled linen until ready for pickup or processing shall be provided. Discharge from soiled linen chutes may be received within this room or in a separate room. A hand-washing facility and a utility sink shall be provided.

**450.3.8.2.2** A central, clean linen storage and issuing room(s), in addition to the linen storage required at the nursing units shall be provided.

**450.3.8.2.3** Parking of clean and soiled linen carts in separate areas from each other and out of traffic shall be provided.

**450.3.8.2.4** Hand-washing facilities in each area where untagged, soiled linen is handled shall be provided.

**450.3.8.2.5** When linen is processed off site a service entrance protected from inclement weather for loading and unloading of linen shall be provided.

**450.3.8.2.6** When linen is processed in a laundry facility located on site the following additional elements shall be provided:

**450.3.8.2.6.1** A laundry processing room(s), separated by walls from other elements of the laundry, with commercial-type laundry equipment for washing and drying. Walls separating the functions of washing and drying are not required.

**450.3.8.2.6.2** Storage for laundry supplies.

**450.3.8.2.6.3** Arrangement of the laundry processes shall generally provide for an orderly workflow from dirty to clean to minimize cross traffic that might mix clean and soiled operations.

**450.3.8.2.7** If the household design model for person centered care is utilized and if required by the functional program, resident laundry facilities including washing and drying equipment shall be provided for staff, family or individual resident use for the laundering only of a resident’s personal items. If these laundry facilities are provided, they shall be readily accessible from each resident household without requiring the user to enter another resident unit, or floor and may be shared between two resident households. These resident laundry facilities shall not have to meet the requirements of the facility laundry described in Section 450.3.8.2 and may utilize residential laundry equipment. Each resident laundry room or area shall contain a hand wash facility and if required by the functional program a single deep bowl utility sink.

**450.3.9 Housekeeping rooms/janitor's closets.**

**450.3.9.1** Housekeeping rooms or janitor's closets shall be provided throughout the facility as required to maintain a clean and sanitary environment but not less than one housekeeping room/janitor's closet shall be provided for each floor in addition to the housekeeping room required in the facility dietary area. Each room has storage space for housekeeping equipment and supplies. A service sink shall be provided in at least one housekeeping room or janitor’s closet on each floor.

**450.3.10 Engineering service and equipment areas.**

**450.3.10.1** Room(s) or separate building(s) for boilers, mechanical and electrical equipment shall be provided as required.

**450.3.10.2** Room(s) for the storage of building maintenance supplies and solvents shall be provided. On site safe and secure storage for the facility drawings, records and manuals shall be provided.

**450.3.10.3** A general maintenance area for repair and maintenance shall be provided as required.

**450.3.10.4** Yard equipment and supply storage room, if provided, shall be located so that equipment may be moved directly to the exterior.

**450.3.11 Details and finishes.**

**450.3.11.1** Potential hazards such as sharp corners, loose laid rugs or carpets, shall not be permitted.

**450.3.11.2** Doors to all rooms containing bathtubs, showers, and water closets for resident use located in double occupancy rooms or are shared between two single occupancy rooms, shall be equipped with privacy hardware that permits emergency access without the use of keys. When such room has only one entrance and is equipped with a swing door, the door shall open outward, or be equipped with emergency release hardware. When emergency release hardware is utilized on a swing door located in a public area, it shall provide visual privacy for the resident and if required by other sections of this code, be smoke resistive.

**450.3.11.3** Interior corridor doors, except those to small closets, janitor’s closets, electrical or mechanical rooms, housekeeping closets and other small rooms not subject to occupancy, shall not swing into the corridor. A door located on the exit access corridor, and required to swing outward, shall open into an alcove.

**450.3.11.4** A sliding door equipped with sliding hardware located on the resident room side of the wall shall be permitted on an individual resident toilet or bathroom. If a sliding door is used on a resident toilet or bathroom, a D-shaped handle at least 4 inches (10.16 cm) long shall be provided to open the door.

**450.3.11.5** Door thresholds except where required at exterior doors, and expansion joint covers shall be designed to facilitate use of wheelchairs and carts and to prevent tripping and shall provide a smooth and level transition from surface-to-surface.

**450.3.11.6** All resident room windows shall have a minimum net glazed area of not less than 8 percent of the gross floor area of the room or bed area served. Operable windows are not required but if they are provided they shall be equipped with insect screens.

**450.3.11.7** Handrails shall be provided on both sides of all corridors that are defined by walls and normally used by residents. Mounting height shall be between 36 inches (0.91m) and 42 inches (1.57 m). A clearance of 1½ inches (38 mm) shall be provided between the handrail and the wall. Handrails shall be designed without sharp corners, edges or hardware and shall permit easy grasping by the resident with a maximum diameter of 1.5 inches (38 mm). It shall be designed to provide a profile with a surface wide enough for the resident to be able to lean on the rail to rest. Rail ends shall return to the wall.

**450.3.11.8** Grab bars, 1 ½ inches (38 mm) in diameter, either permanent or flip down, shall be installed in all resident showers, tubs, and baths and on any two sides of all resident use toilets. Wall-mounted grab bars shall provide an 1½ inch (38 mm) clearance from walls and shall sustain a concentrated load of 250 pounds (113.4 kg). Where flip down grab bars are used, the toilet does not need to be located within 18” of an adjacent wall, except as required by the *Florida Building Code, Accessibility*.

**450.3.11.9** Each resident hand-washing facility shall have a mirror unless prohibited by the nursing program. Mirror placement shall allow for convenient use by both wheelchair occupants and ambulatory persons. Tops and bottoms may be at levels usable by individuals either sitting or standing. Additional mirrors may be provided for wheelchair occupants, or one separate full-length mirror located in the resident room may be provided to meet the needs of wheelchair occupants.

**450.3.11.10** Provisions for soap dispensing and hand drying shall be included at all hand washing facilities. Those in resident use areas shall be paper or cloth towels enclosed to protect against dust or soil and shall be single-unit dispensing.

***Change Section 450.3.11.11 to read as shown:***

**450.3.11.11**~~Only recessed soap dishes shall be allowed in patient use tubs and showers unless the tubs and showers are of molded plastic type fixtures.~~ Reserved.

**450.3.11.12** Towel bars shall be provided at each bathing facility.

**450.3.11.13** All resident use plumbing fixtures and door operating hardware shall be equipped with lever type hardware for easy gripping and turning.

**450.3.11.14** Toilet compartment partitions and urinal screens shall be constructed of product that do not rust, corrode or delaminate.

**450.3.11.15** The minimum ceiling height throughout the facility shall be 8 feet (2.44 m) above the finished floor with the following exceptions:

**450.3.11.15.1** Steam boiler and hot water generator rooms shall have ceiling clearances of at least 2 feet 6 inches (0.76 m) above the main header and connecting pipe.

**450.3.11.15.2** Ceilings in storage rooms, resident room entrance vestibules and toilet rooms shall be at least 7 feet 6 inches (2.33 m) above the finished floor.

**450.3.11.15.3** Ceilings in normally unoccupied spaces and alcoves may be reduced to 7 feet (2.13 m) above the finished floor.

**450.3.11.15.4** Ceilings in exit access corridors and exit passageways shall be a minimum of 8 feet (2.44 m) above the finished floor.

***Change Section 450.3.11.16 to read as shown:***

**450.3.11.16** In addition to the electric drinking fountain or water and cup dispenser in the administrative/lobby area in Section 450.3.7.2, a minimum of one electric drinking fountain or water and cup dispenser shall be provided per resident floor unless drinking water is available from the resident dietary area.

**450.3.11.17** Floor material shall be readily cleanable and appropriate for the location. Floor surfaces in resident-use areas shall be non-glossy to minimize glare. If composition floor tiles are used, the interstices shall be tight.

**450.3.11.17.1** In residential care and sleeping areas, a base shall be provided at the floor line.

**450.3.11.17.2** Floors in areas used for food preparation and assembly shall be water resistant. Floor surfaces, including tile joints, shall be resistant to food acids. In all areas subject to frequent wet-cleaning methods, floor materials shall not be physically affected by germicidal cleaning solutions.

**450.3.11.17.3** Floors subject to traffic while wet, such as shower and bath areas, kitchens, and similar work areas, shall have a slip resistant surface and floor-to-base intersections shall be watertight.

**450.3.11.17.4** Carpet and padding in resident areas shall be stretched tight, in good repair and free of loose edges or wrinkles that might create hazards or interfere with the operation of wheelchairs, walkers or wheeled carts.

**450.3.11.18** Wall finishes shall be washable and, if near plumbing fixtures, shall be smooth and have a moisture-resistant finish. Finish, trim, walls, and floor constructions in dietary and food storage areas shall be free from rodent and insect harboring spaces.

**450.3.11.18.1** Basic wall construction in areas not subject to conditioned air shall be constructed of masonry, cement plaster or moisture-resistant gypsum wallboard.

**450.3.11.18.2** The finishes of all exposed ceilings and ceiling structures in the dietary facilities area shall be readily cleanable with routine housekeeping equipment.

**450.3.11.18.3** Highly polished walls or wall finishes that create glare shall be avoided.

**450.3.11.18.4** Wall coverings that promote the growth of mold and mildew shall be avoided on exterior walls or on walls that are located in normally wet locations.

**450.3.11.19** All smoke partitions, horizontal exits and exit passageway partitions shall be constructed prior to the construction of intervening walls.

**450.3.11.20** Smoke barriers shall be constructed so as to provide a continuous smoke-tight membrane from exterior wall to exterior wall and from the floor to the underside of the deck above. This includes interstitial space and the area above solid fire-tested membranes.

***Change Section 450.3.11.21 to read as shown:***

**450.3.11.21** Where it is not possible to visually inspect a fire rated partition, wall or barrier or a smoke ~~fire/smoke~~ barrier~~s~~ that extends through the attic or interstitial space to the roof or floor deck above because of the ~~fire-tested membrane~~ location of a monolithic ceiling membrane, ~~fire-rated~~ ceiling access panel(s) shall be installed adjacent to each side of the ~~smoke barriers~~ partition, wall or barrier at intervals not exceeding 30 feet (9.00 m) and in such locations as necessary to view all surfaces of the partition, wall or barrier. Other ceiling access panels shall only be installed as required by other sections of the Code. ~~Fire walls, fire barriers, fire partitions, smoke barriers or any other wall required to have fire rated protected openings shall be effectively and permanently identified with signs or stenciling. Such identification shall be above any decorative ceiling and in concealed spaces. Suggested wording for a fire/smoke partition is as follows: "FIRE AND SMOKE BARRIER - PROTECT ALL OPENINGS~~." Partitions, walls and barriers requiring protected openings or penetrations shall be identified in accordance with Section 703 of this code.

**450.3.11.22** Where electrical conduits, cable trays, ducts and utility pipes pass through the smoke partition, the utilities shall be located so that access is maintained to adjacent wall surfaces and to all damper access panels. The details shall show the studs and reinforcing half studs so that proper support is provided for the wall surfacing material. There shall be a minimum clearance of 6 inches (152 mm) between all conduits, piping, and duct work at corridor walls to facilitate the inspection of these walls.

**450.3.12 Elevators.** (Where required).

**450.3.12.1** All buildings having resident use areas on more than one floor shall have hospital-type electric or hydraulic elevator(s) that shall be in compliance with the requirements of Chapter 30 of this code and Chapter 69A-47, *Florida Administrative Code*, "Uniform Fire Safety Standards for Elevators."

**450.3.12.2** In the absence of an engineered traffic study, the minimum number of elevators shall be as follows:

**450.3.12.2.1** At least one elevator shall be installed where resident beds are located on any floor other than the main entrance floor.

**450.3.12.2.2** When 60 to 200 resident beds are located on floors other than the main entrance floor, at least two elevators, one of which shall be of the hospital-type and capacity, shall be installed.

**450.3.12.2.3** When 201 to 350 resident beds are located on floors other than main entrance floor, at least three elevators, two of which shall be of the hospital-type and capacity, shall be installed.

**450.3.12.2.4** For facilities with more than 350 resident beds above the main entrance floor, the number of elevators shall be determined from a facility plan study and from the estimated vertical transportation requirements.

**450.3.12.3** Cars of elevators shall have inside dimensions that accommodate a resident bed with attendants. Cars shall be at least 5 feet (1.52 m) wide by 7 feet 6 inches (2.29 m) deep. The car door shall have a clear opening of not less than 4 feet (1.22 m).

**450.3.12.4** Elevator call buttons shall not be activated by heat or smoke. If employed, light beam door activators shall be used in combination with door-edge safety devices and shall be connected to a system of smoke detectors such that the light control feature will disengage or be overridden if it encounters smoke at any landing.

**450.3.13 Water supply and sewage disposal.**

**450.3.13.1** An approved, accessible, adequate, safe and potable supply of water shall be provided. The water supply shall be accessible and available at all times for drinking, fire protection, culinary, bathing, cleaning and laundry purposes.

**450.3.13.2** Hot water shall be supplied to all lavatory and sink plumbing fixtures available for use by residents and staff.

**450.3.13.3** An approved, adequate and safe method of sewage collection, treatment and disposal shall be provided for each nursing home.

**450.3.14 Heating, Ventilating and air-conditioning (HVAC) systems.** In addition to the basic HVAC system requirements as described by Part 6, ANSI/ASHRAE/ASHE Standard 170-2008: “Ventilation of Health Care Facilities of *The Guidelines”*, the following specific elements are also required.

**450.3.14.1** Mechanical equipment shall be defined as equipment utilized in air-conditioning, heating, ventilating systems and associated electrical, electronic and pneumatic components required for the mechanical equipment to provide the function intended by the application of the equipment. New and existing equipment replacements shall comply with these requirements.

**450.3.14.2** Mechanical equipment shall be installed exterior of the  building, to include  the roof, in a designated equipment room(s), or in a space(s) located in an attic(s**).**

**450.3.14.3** If the unit serves only one room it may be located above the ceiling and shall be accessible through an access opening in accordance with this code. Access panels are not required for lay-in ceiling installations, provided the service functions are not obstructed by other above-ceiling construction, such as electrical conduits, piping, audio visual cabling and like equipment components or supports.

**450.3.14.4** Ventilation shall be provided by mechanical means in all rooms in new facilities and in all renovated or remodeled rooms. The minimum air quantities and filtration efficiencies shall be met as set forth in Part 6 of *The Guidelines* and Table 4.1-1 “Ventilation Requirements for Areas Affecting Resident Care in Nursing Homes” of *The Guidelines* for those spaces that are listed.

**450.3.14.5** For spaces listed in the minimum ventilated rate table, central station type air-handling equipment shall be used. Package terminal air-conditioning units or fan coils may be used to serve resident rooms and shall be provided with MERV 8 filters minimum.

**450.3.14.6** System designs utilizing fan coil or package terminal air-conditioning units shall have the outdoor air ventilation damper permanently closed. The ventilation requirement shall be satisfied by a central station type air handling unit provided with MERV 8 filter minimum or as required by the listed space served. Spaces designated for the exclusive use of physical plant personnel need not comply with this requirement.

**450.3.14.7** Administrative and other staff-only areas shall be provided with outside air at the minimum rate of 20 cfm (9.43 L/s) per person, and the central system shall have a minimum of 30 percent ASHRAE dust spot efficiency filter.

**450.3.14.8** All outdoor air intakes shall be located a minimum of 3 feet (0.91 m) above surrounding surfaces and a minimum of 10 feet (3.05 m) horizontally from any exhaust air or plumbing vent.

**450.3.14.9** All filters in systems in excess of 1000 cfm (28.32 m3/min) capacity shall be installed with differential pressure gauges. The filter gauge shall have the range of acceptable filter operation clearly and permanently indicated.

**450.3.14.10** Filter housings for MERV 13 efficiency filters shall be fully gasketed and sealed with mechanical latching devices capable of exerting and maintaining a continuous, uniform sealing pressure on the filter media when in the latched, closed position. (4156 A5)

**450.3.14.11** The transfer of air quantities through one space to an adjacent space is not permitted except that the transfer of air to maintain space relative pressure by the under cutting of doors is permitted. The maximum allowable air quantity for door undercuts shall be 75 cfm (35.38 L/s) for single door widths up to 44 inches (1117 mm).

**450.3.14.12** Space relative pressure requirements shall be maintained throughout the entire system control range where variable volume systems are utilized.

**450.3.14.13** Spaces having exhaust hoods shall have sufficient make-up supply air such that the required pressure relationship will not be affected by the operation of the hood.

**450.3.14.14** All supply, return and exhaust ventilation fans shall operate continuously. Dietary hood, laundry area, administrative areas that are separated from all resident areas and support areas and maintenance area supply and exhaust fans shall be exempted from continuous operation.

**450.3.14.15** Cooling coil condensate shall be piped to a roof drain, floor drain or other approved location.

**450.3.14.16** Each new resident sleeping room or resident sleeping area that is separated by a permanent partition and door shall be provided with a separate thermostat to provide individual adjustment of room or area temperature.

**450.3.15 Exhaust.**

**450.3.15.1** Exhaust fans and other fans operating in conjunction with a negative duct system pressure shall be located at the discharge end of the system. Fans located immediately within the building located at the end of all exhaust ducts shall be permitted. Existing, nonconforming systems need not be brought into compliance when equipment is replaced due to equipment failure.

**450.3.15.2** Exhaust hoods in food preparation areas shall be listed or certified by a nationally recognized testing laboratory (NRTL).

**450.3.16 Ducts.**

**450.3.16.1** All new facility construction shall have totally ducted supply, return, exhaust and outside air systems including areas of all occupancy classifications.

**450.3.16.2** In new construction, duct system risers penetrating more than one floor shall be installed in vertical fire-rated shafts. Horizontal offsets of the risers shall not be allowed. Fire/smoke dampers shall be installed at duct penetrations of the chase. Existing nonconforming systems shall be brought into compliance when remodel or renovation work is proposed.

**450.3.17 Fan and damper control during fire alarm.**

**450.3.17.1** During an automatic fire alarm or the activation of a duct smoke detector, fan systems and fan equipment serving more than one room shall be stopped to prevent the movement of smoke by mechanical means from the zone in alarm to adjacent smoke zones.

**450.3.17.2** Air-handling and fan coil units serving exit access corridors for the zone in alarm shall shut down upon fire alarm.

**450.3.17.3** Smoke or fire/smoke dampers shall close upon fire alarm and upon manual shutdown of the associated supply, return or exhaust fan.

**450.3.18 Plumbing.**

**450.3.18.1** All plumbing fixtures provided in spaces shall conform to the requirements of Table 450.3.18.1 of plumbing fixtures and minimum trim.

**450.3.18.2** The temperature of hot water supplied to resident and staff use lavatories, showers and bath shall be between 105°F (41°C) and 115°F (46°C) at the discharge end of the fixture.

**450.3.18.3** Wall-mounted water closets, lavatories, drinking fountains and hand-washing facilities shall be attached to floor-mounted carriers and shall withstand an applied vertical load of a minimum of 250 pounds (113.39 kg) to the front of the fixture.

**450.3.18.4** Grease interceptors shall be located outside of the building.

**450.3.18.5** Provide deep seal traps for floor drains in resident showers.

**450.3.18.6** Food preparation sinks, pot washing, dishwashers, janitor sinks, floor drains, and cart and can wash drains shall run through the grease trap. Garbage disposers shall not run through the grease trap.

**450.3.18.7** Ice machines, rinse sinks, dishwashers, and beverage dispenser drip receptacles shall be indirectly wasted.

**450.3.18.8** Each water service main, branch main, riser and branch to a group of fixtures shall have valves. Stop valves shall be provided for each fixture. Panels for valve access shall be provided at all valves.

**450.3.18.9** Backflow preventers (vacuum breakers) shall be installed on bedpan-rinsing attachments, hose bibs and supply nozzles used for connection of hoses or tubing in housekeeping sinks and similar applications.

**450.3.18.10** A backflow preventer shall be installed on the facility main water source(s).

**450.3.18.11** All piping, except control-line tubing, shall be identified. All valves shall be tagged, and a valve schedule shall be provided to the facility owner for permanent record and reference.

**450.3.19 Medical gas and vacuum systems.**

**450.3.19.1** Provide a medical gas and vacuum system in conformance with the requirements for a Nursing Home as described in NFPA 99, *Health Care Facilities*.

**450.3.19.2** Provide a dedicated area for the location of the oxygen system emergency supply source with an impervious, noncombustible, nonpetroleum-based surface located adjacent to the emergency low pressure gaseous oxygen inlet connection. Provision shall be made for securing the vessel to protect it from accidental damage.

***Change Table 450.3.18.1 to read as shown:***

**TABLE 450.3.18.1  
PLUMBING FIXTURES AND MINIMUM TRIM**

|  |  |  |  |
| --- | --- | --- | --- |
| **ROOM/FUNCTION** | | **FIXTURE, FITTING, AND TRIM** | |
| Barber and Beauty | | G-6 | |
| Bed Pan Sanitizer | | K-7 | |
| Clean Utility Room | | C-2 | |
| ~~Corridor per nursing unit~~ Per resident floor | | I-5 | |
| Eye Wash Station(s) | | L-5 | |
| Exam/Treatment Room | | A-2 | |
| Housekeeping/Janitor's Closet | | E-6 | |
| Laundry | | A-1; H-1 | |
| Medication Preparation Room | | C-2 | |
| Nourishment Room | | C-2 | |
| Staff hand washing facilities | | C-2 | |
| Resident Baths | | J-1 | |
| Resident bedrooms with three or more beds | | A-1 | |
| Resident Room Bath | | A-1; B-4; J-1 | |
| Resident Toilet Rooms | | A-1; B-4 | |
| Soiled Utility Room(s) | | D-2; F-3 AND 4; K-5 | |
| Therapy Areas | | A-2 | |
| Toilet Rooms, public ~~and staff~~ | | A-1; B-5 | |
| **FIXTURE LEGEND** | | | |
| A.        Lavatory  B.        Water Closet  C.        Sink, Single Compartment  D.        Sink, Double Compartment  E.         Sink or Receptor, Janitor  F.         Sink, Clinical Servic5918e and Rinsing Device | | G.        Sink, Shampoo  H.        Sink, Laundry  I.          Electric Drinking Fountain or water with cup dispenser  J.         Bathing Facilities or Shower (Note 1)  K.        Sanitizer w/ rinse water at 140°F (60°C) or  chemical rinse. (If required by the functional  program of the facility.)  L.         Eye Wash Fixtures | |
| **FIXTURE LEGEND** | | | |
| 1. Hot and cold supplies.  2. Hot and cold supplies with wrist blades from 3 1/2inches (89 mm) to 4 1/2inches (114 mm) in length or foot or knee control and a gooseneck spout with discharge a minimum of 5 inches (127 mm) above the fixture rim.  3. Hot and cold supplies with elbow blades a minimum of 6 inches (152 mm) long or foot or knee control.  4. Bedpan rinsing attachment, cold water only. (If required by the functional program of the facility.)  5. Cold supply.  6. Hot and cold supplies with hose connection and backflow preventer.  7. Hot water supply. | | | |
| **NOTES:** 1. Mixing valves used in shower applications shall be of the balanced-pressure type design.  2. If eye wash stations are provided, they shall be installed in accordance with American National Standards Institute (ANSI) Z358.1 for Emergency Eyewash and Shower Equipment. | |

**450.3.20 Fire pump.** (Where required).

**450.3.20.1** Fire pumps and ancillary equipment shall be separated from other functions by construction having a 2-hour fire-resistance rating.

**450.3.20.2** The fire pump normal service disconnect shall be rated to hold locked rotor current. If the approved normal service disconnect is located on the exterior, it shall be supervised by connection to the fire pump remote annunciator and shall provide a separate fire alarm system trouble indication.

**450.3.20.3** When the fire pump is placed on the emergency system in addition to the normal supply, the emergency feeder protective device shall be sized in accordance with maximum rating or settings of Chapter 27 of the *Florida Building Code, Building*.

**450.3.20.4** The fire pump transfer switch may be either manual or automatic. If located on the line side of the controller as a separate unit, the switch must be rated for the pump motor locked rotor current indefinitely and must be located in the pump room.

**450.3.20.5** Combination fire pump controller and transfer switch units listed by the Underwriter's Laboratories, Inc., as prescribed by Chapter 27 of the *Florida Building Code, Building* are acceptable when the transfer switch has exposable and replaceable contacts, not circuit breaker types, rated for the available short-circuit current.

**450.3.20.6** The fire pump shall be installed in a readily accessible location. When it is located on the grade level floor, there shall be direct access from the exterior.

**450.3.21 Electrical requirements.**

**450.3.21.1** All material, including equipment, conductors, controls, and signaling devices, shall be installed to provide a complete electrical system with the necessary characteristics and capacity to supply the electrical facility requirements as shown in the specifications and as indicated on the plans. All materials and equipment shall be listed as complying with applicable standards of Underwriter's Laboratories, Inc., or other nationally recognized testing facilities. Field labeling of equipment and materials will be permitted only when provided by a nationally recognized testing laboratory (NRTL) that has been certified by the Occupational Safety and Health Administration (OSHA) for that referenced standard.

**450.3.21.2** For purposes of this section, a resident room, a resident therapy area or an examination room shall be considered a "patient care area" as described in NFPA 99 *Health Care Facilities*, and Chapter 27, Electrical Systems, of this code.

**450.3.21.3** Panels located in spaces subject to storage shall have the clear working space per Chapter 27, Electrical Systems, of this code, permanently marked "ELECTRICAL—NOT FOR STORAGE" with a line outlining the required clear working space on the floor and wall.

**450.3.21.4** Panel boards shall not be located in an exit access corridor or in an unenclosed space or area that is open to an exit access corridor. Panel boards may be located inside of a room or closet that opens into an exit access corridor only when the room or closet is separated from the exit access corridor by a partition and door that comply with this code. **(4156 A5)**

**450.3.21.5** There shall be documentation for equipotential grounding in all patient care areas, building service ground electrode systems, lightning protection ground terminals and special systems such as fire alarm, nurse call, paging, generator, emergency power and breaker coordination.

**450.3.22 Lighting.**

**450.3.22.1** All spaces occupied by people, machinery and equipment within buildings, approaches to buildings and parking lots shall have electric lighting.

**450.3.22.2** Resident bedrooms shall have general lighting from ceiling mounted fixtures, floor lamp fixtures or table mounted fixtures. Separate fixed night lighting shall be provided. The night-light shall have a switch at the entrance to each resident's room or separate sleeping a**r**ea. A reading light shall be provided for each resident. Resident reading lights and other fixed lights not switched at the door shall have switch controls convenient for use at the luminary. Wall-mounted switches for control of lighting in resident areas shall be of quiet operating type.

***Change Section 450.3.22.3 to read as shown:***

**450.3.22.3** All lighting in the resident use areas including corridors, shared spaces, treatment areas, sleeping areas, social areas and living areas shall meet the recommendations ~~requirements~~ of ANSI/IES RP-28-07 Lighting and the Visual Environment for Senior Living as referenced in Chapter 35 of this code.

**450.3.22.4** All general resident room lighting and all corridor lighting used by residents shall be designed to minimize glare such as indirect lighting.

**450.3.23 Receptacles.**

**450.3.23.1** Provide one general purpose duplex receptacle on another wall to serve each resident and one additional duplex receptacle at the head of the bed if a motorized bed is provided.

**450.3.23.2** Duplex receptacles for general use shall be installed in all general purpose corridors, approximately 50 feet (15.24 m) apart and within 25 feet (7.52 m) of corridor ends.

**450.3.24 Fire alarm systems.**

**450.3.24.1** A fire alarm annunciator panel shall be provided at a single designated 24-hour monitored location. The panel shall indicate audibly and visually, the zone of actuation of the alarm and system trouble. As a minimum, devices located in each smoke compartment shall be interconnected as a separate fire alarm zone. Annunciator wiring shall be supervised. Annunciator shall clearly indicate the zone location of the alarm. Provide an adjacent zone location map to quickly locate alarm condition.

***Change Section 450.3.25 to read as shown:***

**450.3.25 Nurse call systems**. Wired or wireless type nurse call systems shall be permitted if they have been tested and approved by a national recognized testing laboratory (NRTL) to meet the requirements of UL 1069, 7th edition published October 12, 2007 as referenced in Chapter 35 of this code. All wireless systems shall be been tested and approved by a national recognized testing laboratory (NRTL) to meet the requirements of Section 49, Wireless Systems of UL 1069, 7th edition as referenced in Chapter 35 of this code. All nurse call systems whether wired or wireless shall have electronically supervised visual and audible annunciation ~~be supervised~~ in accordance with the supervision criteria ~~requirements~~ of UL 1069, 7th edition for ~~wired and wireless~~ nurse call systems and tested and approved by a nationally recognized testing laboratory (NRTL) to meet those requirements.

**450.3.25.1** A nurse call system shall be provided that will register a call from each resident bed to the related staff work area(s) by activating a visual signal at the resident room door or wireless pager and activating a visual and audible signal in the clean utility, soiled utility, nourishment station, medication prep or mobile nurse station receiver and the master station of the resident. If a mobile nurse station receiver is utilized to receive the resident call, it will be worn by all staff who are assigned to the resident unit and shall identify the specific resident and or room from which the call was placed. Audible signals may be temporarily silenced, provided subsequent calls automatically reactive the audible signal. In rooms containing two or more calling stations, indicating lights shall be provided for each calling station. In multi-corridor nursing units, corridor zone lights shall be installed at corridor intersections in the vicinity of staff work areas.

**450.3.25.2** An emergency calling station of the pull cord type shall be provided and shall be conveniently located for resident use at each resident toilet, bath or shower room but not inside of the shower unless the nurse call device is listed for wet locations. The call signal shall be the highest priority and shall be cancelled only at the emergency calling station. The emergency calling station shall activate distinctive audible and visual signals immediately at the resident room door or wireless pager, and activate a visual and audible signal in the clean utility, soiled utility, nourishment station, medication prep or mobile nurse station receiver and the master station of the resident unit. If a mobile nurse station receiver is utilized to receive the resident call, it will be worn by all staff who are assigned to the resident unit and shall identify the specific resident and or room from which the call was placed.

**450.3.25.3** The nurse call master station shall be located inside the resident unit at a staff administrative area and shall not block any incoming resident calls. The master station control settings shall not prevent the activation of the incoming audible and visual signals. In wireless systems, all orphaned calls to mobile nurse station receivers will register at the nurse call master station.

**450.3.25.4** Activation of an emergency call shall not cancel a normal call from the same room.

**450.3.25.5** A corridor dome light shall be located directly outside of any resident care area that is equipped with a wired nurse call system.

**450.3.26 Essential electrical system.**

**450.3.26.1** A Type 1 essential electrical system shall be provided in all nursing homes as described in NFPA 99, *Health Care Facilities*. The emergency power for this system shall meet the requirements of a Level 1, Type 10, Class 48 generator as described in NFPA 110, *Emergency Standby Power Systems*.

**450.3.26.2** In new construction, the normal main service equipment shall be separated from the emergency distribution equipment by locating it in a separate room. Transfer switches shall be considered emergency distribution equipment for this purpose.

**450.3.26.3** The generator remote annunciator shall be located at a designated 24 hour staffed location.

***Change Section 450.3.26.4 to read as shown:***

**450.3.26.4** Switches for critical branch lighting shall be completely separate from normal switching. ~~The devices or cover plates shall be of a distinctive color.~~ Critical branch switches may be adjacent to normal switches. Switches for life safety lighting are not permitted except as required for dusk-to-dawn automatic control of exterior lighting fixtures.

**450.3.26.5** There shall be selected life safety lighting provided at a minimum of 1 footcandle (10 lux) and designed for automatic dusk-to-dawn operation along the travel paths from the exits to the public way or to safe areas located a minimum of 30 feet (9.14 m) from the building.

**450.3.26.6** A minimum of one elevator per bank serving any patient use floor shall be connected to the equipment branch of the essential electric system and arranged for manual or automatic operation during loss of normal power. Elevator cab lighting, controls, and communication and signal systems shall be connected to the life safety branch.

**450.3.26.7** If a day tank is provided, it shall be equipped with a dedicated low-level fuel alarm and a manual pump. The alarm shall be located at the generator derangement panel.

**450.3.26.8** Transfer switch contacts shall be of the open type and shall be accessible for inspection and replacement**.**

**450.3.26.9** If required by the facility's emergency food plan, there shall be power connected to the equipment branch of the essential electrical system for kitchen refrigerators, freezers and range hood exhaust fans. Selected lighting within the kitchen and dry storage areas shall be connected to the critical branch of the essential electrical system.

**450.3.27 Lightning protection.**

**450.3.27.1** A lightning protection system shall be provided for all new buildings and additions in accordance with NFPA 780, *Installation of Lightning Protection Systems.*

**450.3.27.2** Where additions are constructed to existing buildings, the existing building's lightning protection system, if connected to the new lightning protection system, shall be inspected and brought into compliance with current standards.

**450.3.27.3** There shall be surge protection for all normal and emergency electrical services.

**450.3.27.4** Additional surge protection shall be provided for all low-voltage and power connections to all electronic equipment in critical care areas and life safety systems and equipment such as fire alarm, nurse call and other critical systems. Protection shall be in accordance with appropriate IEEE Standards for the type of equipment protected.

**450.3.27.5** All low voltage system main or branch circuits entering or exiting the structure shall have surge suppressors installed for each pair of conductors and shall have visual indication for protector failure to the maximum extent feasible.

**450.4 Physical plant requirements for disaster preparedness of new nursing home construction.**

**450.4.1 Definitions.** The following definitions shall apply specifically to this section:

**450.4.1.1** "New facility" means a nursing home which has not received a Stage II Preliminary Plan approval from the Agency for Health Care Administration pursuant to this section.

**450.4.1.2** "Net square footage" means the clear floor space of an area excluding cabinetry and other fixed furniture or equipment.

**450.4.1.3** "During and immediately following" means a period of 72 hours following the loss of normal support utilities to the facility.

**450.4.1.4** "Occupied resident area(s)" means the location of residents inside of the new facility or in the addition of a wing or floor to an existing facility during and immediately following a disaster. If these residents are to be relocated into an area of the existing facility during and immediately following a disaster, then for these purposes, that location will be defined as the "occupied resident area."

**450.4.1.5** "Resident support area(s)" means the area(s) required to ensure the health, safety and well-being of residents during and immediately following a disaster, such as a staff work area, clean and soiled utility areas, food preparation area and other areas as determined by the facility to be kept operational during and immediately following a disaster.

**450.4.1.6 "**On site" means either in, immediately adjacent to, or on the campus of the facility, or addition of a wing or floor to an existing facility.

**450.4.1.7** "Resident(s) served" means the number of residents as determined by the facility that will be served in the occupied resident area(s) during and immediately following a disaster.

**450.4.2 Disaster preparedness construction standards.** The following construction standards are in addition to the physical plant requirements described in Sections 450.2 through 450.3. These minimum standards are intended to increase the ability of the facility to be structurally capable of serving as a shelter for residents, staff and the family of residents and staff and equipped to be self-supporting during and immediately following a disaster:

**450.4.2.1 Space standards.**

**450.4.2.1.1** For planning purposes, each new facility shall provide a minimum of 30 net square feet (2.79 m2) per resident served in the occupied resident area(s). The number of residents to be served is to be determined by the facility administration.

**450.4.2.1.2** As determined by the facility, space for administrative and support activities shall be provided for use by facility staff to allow for care of residents in the occupied resident area(s).

**450.4.2.1.3** As determined by the facility, space shall be provided for all staff and family members of residents and staff.

**450.4.2.2 Site standards**

**450.4.2.2.1** Except as permitted by Section 1612 of this code, the lowest floor of all new facilities shall be elevated to the Base Flood Elevation as defined in Section 1612 of this code, plus 2 feet (607mm), or to the height of hurricane Category 3 (Saffir-Simpson scale) surge inundation elevation, as described by the Sea, Lake, and Overland Surge (SLOSH) from Hurricanes model developed by the Federal Emergency Management Agency (FEMA), United States Army Corps of Engineers (USACE), and the National Weather Service (NWS), whichever is higher.

**450.4.2.2.2** For all existing facilities, the lowest floor elevations of all additions, and all resident support areas including food service, and all resident support utilities, including mechanical, and electrical (except fuel storage as noted in Section 450.4.2.9.3 of this code) for the additions shall be at or above the elevation of the existing building, if the existing building was designed and constructed to comply with either the site standards of section 450.4 of this code or local flood resistant requirements, in effect at the time of construction, whichever requires the higher elevation, unless otherwise permitted by Section 1612 of this code. If the existing building was constructed prior to the adoption of either the site standards of 450.4 of this code or local flood resistant requirements, then the addition and all resident support areas and utilities for the addition as described in this section shall either be designed and constructed to meet the requirements of Section 450.4.2.2.1 of this code or be designed and constructed to meet the dry flood proofing requirements of Section 1612 of this code.

**450.4.2.2.3** Substantial improvement, as defined by Section 1612 of this code, to all existing facilities located within flood areas as defined in Section 1612 of this code or within a Category 3 surge inundation zone as described in Section 450.4.2.2.1 of this code, shall be designed and constructed in compliance with Section 1612 of this code.

**450.4.2.2.4** Where an off-site public access route is available to the new facility at or above the, base flood elevation, a minimum of one on-site emergency access route shall be provided that is located at the same elevation as the public access route.

**450.4.2.2.5** New landscaping elements shall be located so if damaged they will not block the on-site emergency access route to the facility. Outdoor signs and their foundations shall be designed to meet the wind load criteria of this code.

**450.4.2.2.6** New light standards and their foundations used for lighting the on-site emergency access route shall be designed to meet the wind load criteria of ASCE 7 with wind speeds determined from Figure 26.5-1B with appropriate exposure category dependent on site location.

**450.4.2.3 Structural standards.** Wind load design of the building structure and exterior envelope including exterior wall systems shall be designed in accordance with this code.

**450.4.2.4 Roofing standards.**

**450.4.2.4.1** Roofing membrane material shall resist the uplift forces specified in this code. Roof coverings shall be installed according to the specifications provided by the manufacturer.

**450.4.2.4.2** Loose-laid ballasted roofs shall not be permitted.

**450.4.2.4.3** All new roof appendages such as ducts, tanks, ventilators, receivers, dx condensing units and decorative mansard roofs and their attachment systems shall be structurally engineered to meet the wind load requirements of this code. All of these attachment systems shall be connected directly to the underlying roof structure or roof support structure.

**450.4.2.5 Exterior unit standards.**

**450.4.2.5.1** All exterior window units, skylights, exterior louvers and exterior door units including vision panels and their anchoring systems shall be impact resistant or protected with an impact resistant covering meeting the requirements of  the Testing Application Standards (TAS) 201, 202, and 203 of this code in accordance with the requirements of Sections 1626.2 thru 1626.4 of this code. The impact resistant coverings may be either permanently attached or may be removable if stored on site of the facility.

**450.4.2.5.2** The location or application of exterior impact protective systems shall not prevent required exit egress from the building.

**450.4.2.5.3** When not being utilized to protect the windows, the permanently attached impact resistant coverings shall not reduce the percentage of the clear window opening below that required by this code for the patient room.

**450.4.2.6 Heating, ventilation and air conditioning (HVAC) standards.**

**450.4.2.6.1** All new air-moving equipment, dx condensing units, through-wall units and other HVAC equipment located outside of, partially outside of, or on the roof of the facility and providing service to the facility shall be permitted only when either of the following are met:

**450.4.2.6.1.1** They are located inside a penthouse designed to meet the wind load requirements of the *Florida Building Code, Building*; or

**450.4.2.6.1.2** Their fastening systems are designed to meet the wind load requirements of the *Florida Building Code, Building* and they and all associated equipment are protected as required by TAS 201, 202, and 203 in accordance with the requirements of Sections 1626.2 thru 1626.4 of this code from damage by horizontal impact by a separate and independent structure that allows access to all parts of the equipment at all times or

**450.4.2.6.1.3** They are completely protected by the equipment shrouding that meets the requirements of TAS 201, 202, and 203 in accordance with the requirements of Sections 1626.2-1626.4 of this code.

**450.4.2.6.2** All occupied resident areas and resident support areas shall be supplied with sufficient HVAC as determined by the facility to ensure the health, safety and well-being of all residents and staff during and immediately following a disaster.

**450.4.2.6.3** As determined by the facility, these selected HVAC systems and their associated support equipment, such as a control air compressor, essential to the maintenance of the occupied resident and resident support area(s) shall receive their power from the emergency power supply system(s).

**450.4.2.6.4** Ventilation air change rates in occupied patient areas shall be maintained as specified in this section during and immediately following a disaster by connection to the essential electrical system.

**450.4.2.6.5** Auxiliary equipment and specialties such as hydronic supply piping and pneumatic control piping shall be located, routed and protected in such a manner as determined by the facility to ensure the equipment receiving the services will not be interrupted.

**450.4.2.7 Plumbing standards.**

**450.4.2.7.1** There shall be an independent on-site supply (i.e., water well) or on-site storage capability (i.e., empty water storage containers or bladders) of potable water at a minimum quantity of 3 gallons (11 L) per resident served per day during and immediately following a disaster. For planning purposes the number of in-patients shall be determined in writing by the facility. Hot water in boilers or tanks shall not be counted to meet this requirement.

**450.4.2.7.2** There shall be an independent on-site supply or storage capability of potable water at a minimum quantity of 1 gallon (4 L) per facility staff, and other personnel in the facility per day during and immediately following a disaster. For planning purposes, the number of these personnel shall be estimated by the facility. Hot water in boilers or tanks shall not be counted to meet this requirement.

**450.4.2.7.3** The facility shall determine what amount of water will be sufficient to provide for resident services, and shall maintain an on-site supply or on-site storage of the determined amount.

**450.4.2.7.4** When used to meet the minimum requirements of this rule, selected system appurtenances such as water pressure maintenance house pumps and emergency water supply well pumps shall take power from the emergency power supply system(s).

**450.4.2.8 Medical gas systems standards.** The storage, distribution piping system and appurtenances shall be contained within a protected area(s) designed and constructed to meet the structural requirements of this code and debris impact requirements as specified by Sections 1626.2 through 1626.4.

**450.4.2.9 Emergency electrical generator and essential electrical system standards.**

**450.4.2.9.1** There shall be an on-site Level 1 emergency electrical generator system designed to support the occupied resident area(s) and resident support area(s) with at least the following support services:

**450.4.2.9.1.1** Ice-making equipment to produce ice for the residents served, or freezer storage equipment for the storage of ice for the residents served.

**450.4.2.9.1.2** Refrigerator unit(s) and food service equipment if required by the emergency food plan;

**450.4.2.9.1.3** At a minimum, there shall be one clothes washer and one clothes dryer for laundry service.

**450.4.2.9.1.4** Selected HVAC systems as determined by the facility and other systems required by this code.

**450.4.2.9.1.5** Electric lighting required to provide care and service to the patient occupied areas and the necessary patient support areas shall be connected to the essential electrical system**.**

**450.4.2.9.2** The emergency generator system shall be fueled by a fuel supply stored on-site sized to fuel the generator for 100 percent load for 64 hours or 72 hours for actual demand load of the occupied resident area(s) and resident support area(s) and resident support utilities during and immediately following a disaster, whichever is greater.

**450.4.2.9.3** The fuel supply shall either be located below ground or contained within a protected area that is designed and constructed to meet the structural requirements of this code and debris impact requirements as specified by Sections 1626.2 through 1626.4. If an underground system is used, it shall be designed so as to exclude the entrance of any foreign solids or liquids.

**450.4.2.9.4** All fuel lines supporting the generator system(s) shall be protected also with a method designed and constructed to meet the structural requirements of this code and debris impact requirements as specified by Sections 1626.2 through 1626.4.

***Change Section 450.4.2.9.5******to read as shown:***

**450.4.2.9.5** All panel boards, transfer switches, disconnect switches, enclosed circuit breakers or emergency system raceway systems required to support the occupied resident area(s), resident support area(s) or support utilities shall be contained within a protected area(s) designed and constructed to meet the structural requirements of this code and debris impact requirements as specified by Sections 1626.2 through 1626.4, and shall not rely on systems or devices outside of this protected area(s) for their reliability or continuation of service. The equipment system shall be kept entirely independent of all other wiring and equipment and shall not enter the same raceways, boxes, or cabinets with other wiring.

**450.4.2.9.6** The emergency generator(s) shall be air- or self-contained liquid cooled and it and other essential electrical equipment shall be installed in a protected area(s) designed and constructed to meet the structural requirements of this code and debris impact requirements as specified by Sections 1626.2 through 1626.4.

***Change Section 450.4.2.9.7******to read as shown:***

**450.4.2.9.7** If the facility does not have a permanent onsite optional stand-by generator to operate the entire normal branch electrical system, there shall be a permanently installed predesigned electrical service entry for the entire normal branch electrical system that will allow a quick connection to a temporary electrical generator. This quick connection shall be installed inside of a permanent metal enclosure rated for this purpose and may be located on the exterior of the building.

**450.4.2.10 Fire protection standards.**

**450.4.2.10.1** If the facility requires fire sprinklers as part of its fire protection, either of the following shall be met:

**450.4.2.10.1.1** On-site water storage capacity to continue sprinkler coverage, in accordance with the requirements of NFPA 13, *Sprinkler Systems*, fire watch, conducted in accordance with the requirements of Chapter 59A-4, *Florida Administrative Code*.

**450.4.2.10.2** If the facility provides a fire watch in lieu of water storage to continue sprinkle coverage, then one 4-A type fire extinguisher or equivalent shall be provided for every three or less 2-A fire extinguishers required by NFPA 10, *Portable Extinguishers*, for the area served. These additional extinguishers shall be equally distributed throughout the area they are protecting.

**450.4.2.11** **External emergency communications standards**. (Reference Chapter 59A-4, *Florida Administrative Code* for requirements.)

**Florida Specific Amendment**

***Section 451 – Ambulatory Surgical Centers***

***Add Florida specific requirements from Section 421 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 451**

**AMBULATORY SURGICAL CENTERS**

**451.1 Scope.**

**451.1.1** All newly licensed or newly constructed ambulatory surgical centers, all ambulatory surgical center outpatient facilities and ambulatory surgical center mobile and transportable units, unless exempted by Chapter 395.0163, *Florida Statutes* and all additions, alterations or renovations to an existing licensed ambulatory surgical center shall comply with all applicable requirements of this code and the minimum standards of design, construction and specified minimum essential utilities and facilities of this Section and shall have plans reviewed and construction surveyed by the state agency authorized to do so by Chapter 553.80 (1)(c), *Florida Statutes* to assure compliance with all applicable requirements of this code.

**451.1.2** A change of ownership of an existing licensed ambulatory surgical center shall not require compliance with this Section.

**451.1.3** The *Florida Building Code, Existing Buildings*, Section 101.2 “Scope” exempts state licensed ambulatory surgical centers from compliance with that code. Any repair, alteration, change of occupancy, addition and relocation of an existing state licensed ambulatory surgical center shall comply with the applicable requirements of this code and this Section.

**451.1.4** For project submission and fee requirements, and other administrative, licensure, and programmatic provisions for ambulatory surgical centers, see “Agency for Health Care Administration,” [AHCA] Chapter 59A-5 *Florida Administrative Code* (F.A.C.) and Chapter 395, *Florida Statutes*.

**451.1.5** For state licensure purposes, these codes and standards shall be applicable to the project on the effective date of this code at the time of preliminary plan approval by the Agency for Health Care Administration (the Agency) or at the first construction document review if there has been no previous preliminary plan approval for that project.

**451.2** Additional codes and standards for the design and construction of ambulatory surgical centers, and unless exempted by Chapter 395.0163, *Florida Statutes*, all ambulatory surgical center outpatient facilities and ambulatory surgical center mobile and transportable units. In addition to the minimum standards required by Section 451 of this code, Chapter 59A-5 *Florida Administrative Code* or by Chapter 395, *Florida Statutes*, all new ambulatory surgical centers and all additions, alterations or renovations to existing ambulatory surgical centers shall also be in compliance with the following codes and standards on the effective date of this code as described in Section 451.1.5 of this code:

**451.2.1** The fire codes described in Chapter 69A-3.012, “Standards of the National Fire Protection Association Adopted,” *Florida Administrative Code.*

**451.2.2** *Guidelines for Design and Construction of Health Care Facilities* (*The Guidelines*), as reference in Chapter 35 of this code.

**451.3 Additional physical plant requirements for ambulatory surgical centers.**

**451.3.1** In addition to the codes and standards referenced in Section 451.2 of this code, the minimum standards of construction and specified minimum essential facilities described in Section 451.3 of this code shall apply to all ambulatory surgical centers as described in Section 451.1 of this code. and to all new additions, alterations or renovations to existing ambulatory surgical center on the effective date of the code.

**451.3.2 Operating rooms.** (Reference *The Guidelines* for other requirements.)

**451.3.2.1** All ambulatory surgical centers shall be equipped with a minimum of one operating room that is in compliance with the requirements of a "Class C" operating room as described in The *Guidelines*. Only “Class C” operating rooms will be listed as operating rooms for purposes of licensure.

**451.3.2.2** If provided, all Class A or Class B operating rooms, and all procedure, examination, or treatment rooms shall meet the requirements for these rooms as described in The *Guidelines*.

**451.3.3 Recovery area.** (Reference *The Guidelines* for other requirements.)

**451.3.3.1**Only the Post-anesthesia recovery positions as described in The  *Guidelines* will be listed as recovery positions for purposes of licensure.

***Add Section 451.3.3.1.1 ~~4.4~~ to read as shown:***

**451.3.3.1.1 ~~4.4~~** Where it is not possible to inspect a fire rated partition, wall or barrier or a smoke barrier that extends through the attic or interstitial space to the roof or floor deck above because of the location of a monolithic ceiling membrane, ceiling access panel(s) shall be installed adjacent to each side of the partition, wall or barrier at intervals not exceeding 30 feet (9.00 m) and in such locations as necessary to view all surfaces of the partition, wall or barrier. Other ceiling access panels shall only be installed as required by other sections of the Code. Partitions, walls and barriers requiring protected openings or penetrations shall be identified in accordance with Section 703 of this code.

**451.3.4 Architectural Details, Surfaces, and Furnishings.** (Reference *The Guidelines* for other requirements.)

**451.3.4.1** No doors shall swing into the corridor except those to small closets or small mechanical or electrical rooms that cannot be usefully occupied with the doors in the closed position.

**451.3.4.2** All exit access corridor doors must be equipped with automatic positive latching hardware.

**451.3.4.3** The use of sliding pocket doors to patient use toilets shall not be permitted.

**451.3.5 Elevators where required.** (Reference *The Guidelines* for other requirements.)

**451.3.5.1** All new ambulatory surgical centers located in multistory buildings where patient treatment areas are located on other than the exit floor shall have at least one 2,500 pound (933 kg) capacity elevator that shall be in compliance with the requirements of Section 451.3.13.5 of this code and the requirements of Chapter 30 of the code.

**451.3.5.2** This required elevator shall be sized to accommodate an ambulance stretcher 76 inches (1931 mm) long and 24 inches (610 mm) wide in the horizontal position. This elevator shall be identified with a sign indicating it as the ambulance stretcher elevator.

**451.3.6 Air-conditioning, heating and ventilating systems.** (Reference *The Guidelines* for other requirements.)

**451.3.6.1** Air-handling equipment shall be located either on the roof of the building it serves or in mechanical equipment rooms unless it serves only one room and is located in that room. In buildings with multiple uses, tenants or occupancies, the licensed health care areas required by this code to maintain filter efficiencies and relative air pressure relationships shall be served by separate ducted mechanical air supply, return and exhaust systems. This equipment may be located in other areas of the building or in the same room as the building air-handling equipment if access during normal business hours is available.

**451.3.6.2** Variable volume systems shall not be permitted in surgical procedures rooms and recovery rooms.

**451.3.6.3** Friable duct linings exposed to air movement shall not be used in ducts, terminal boxes or other systems supplying operating rooms and recovery rooms, unless terminal filters of at least 90-percent efficiency are installed downstream of linings. Flexible duct work shall have a continuous metal inner liner encased by insulating material with an outer vapor jacket conforming to [UL 181](javascript:vo();) unless the flexible duct meets the following criteria:

**451.3.6.3.1** The duct conforms to UL Class 1 Air Duct, Standard 181 with minimum rated air velocity of 4,000 feet per minute, and is pressure rated for a minimum of 4-inches water gage positive pressure and 1-inch water gage negative pressure.

**451.3.6.3.2** The inner core of the duct is constructed of Chlorinated Polyethylene (CPE) material encircling a steel helix bonded to the CPE.

**451.3.6.3.3** The duct has a fire-retardant metalized vapor barrier that is reinforced with crosshatched fiberglass scrim having a permanence of not greater than 0.05 perms when tested in accordance with [ASTM E 96](javascript:vo();) Procedure A.

**451.3.6.3.4** The duct has passed an impact test similar to the [UL 181](javascript:vo();) standard, conducted by a nationally recognized testing laboratory (NRTL) except it shall use a 25-pound weight dropped from a height of 10 feet. As a result of the test, the inner and outer surfaces of the sample shall not have ruptured, broken, torn, ripped, collapsed or separated in order for the duct to pass the test. In addition, the helix shall rebound to a cross-sectional elliptical area not less than 80 percent of the original test sample diameter. The use of flexible duct shall be limited to flexible air connector applications.

**451.3.6.4** Filter housing frame blank-off panels shall be permanently attached to the frame, constructed of rigid materials and have sealing surfaces equal to or greater than the filter media installed in the filter frame. All joints between the blank-off panels, filter housing frames and filter support structure shall be caulked air tight.

**451.3.7 Fan and damper control during fire alarm.**

**451.3.7.1** During an automatic fire alarm activation, fan systems and fan equipment serving more than one room shall be stopped to prevent the movement of smoke by mechanical means from the zone in alarm to adjacent smoke zones or to adjacent areas within the smoke zone if there is only one zone in the facility.

**451.3.7.2** Fan control shall be designed so as to minimize the interruption of heating, ventilating and air conditioning in compartments remote from the compartment in alarm.

**451.3.7.3** Fan control shall not interfere with the continuous operation of exhaust systems conveying ethylene oxide or other hazardous chemicals and fumes or systems required to operate continuously for the health and safety of occupants. Air-handling systems shall be designed to allow for continuous operation of all such systems and to minimize movement of smoke by mechanical means from the zone in alarm.

**451.3.8 Plumbing fixtures.** (Reference *The Guidelines* for other requirements.)

**451.3.8.1** Plumbing shall comply with the *Florida Building Code, Plumbing*.

**451.3.9 Fire pump**.

**451.3.9.1** Where required in new construction, fire pumps and ancillary equipment shall be separated from other functions by construction having a 2-hour fire-resistance rating.

**451.3.9.2** The fire pump normal service disconnect shall be rated to hold locked rotor current indefinitely. If the approved normal service disconnect is located on the exterior, it shall be supervised by connection to the fire pump remote annunciator and shall provide a separate fire alarm system trouble indication.

**451.3.9.3** When the fire pump is placed on the emergency system in addition to the normal supply, the emergency feeder protective device shall be sized in accordance with maximum rating or settings of Chapter 27 of the *Florida Building Code, Building*.

**451.3.9.4** The fire pump transfer switch may be either manual or automatic. If located on the line side of the controller as a separate unit, the switch must be rated for the pump motor locked rotor current indefinitely and must be located in the pump room.

**451.3.9.5** Combination fire pump controller and transfer switch units listed by the Underwriter's Laboratories, Inc., as prescribed by Chapter 27 of the *Florida Building Code, Building* are acceptable when the transfer switch has exposable and replaceable contacts, not circuit breaker types, rated for the available short-circuit current.

**451.3.9.6** The fire pump shall be installed in a readily accessible location When it is located on the grade level floor, there shall be direct access from the exterior.

**451.3.10 Electrical requirements.** (Reference *The Guidelines* for other requirements.)

**451.3.10.1** All material, including equipment, conductors, controls, and signaling devices, shall be installed to provide a complete electrical system with the necessary characteristics and capacity to supply the electrical facilities shown in the specifications or indicated on the plans.

**451.3.10.2** All materials and equipment shall be factory listed as complying with applicable standards of Underwriter's Laboratories, Inc., or other similarly established standards of a nationally recognized testing laboratory (NRTL) that has been certified by the Occupational Safety and Health Administration (OSHA) for that referenced standard.

**451.3.10.3** Field labeling of equipment and materials shall be permitted only when provided by a nationally recognized testing laboratory that has been certified by the Occupational Safety and Health Administration (OSHA) for that referenced standard.

**451.3.10.4** There shall be documentation for equipotential grounding in all patient care areas, building service ground electrode systems, and special systems such as fire alarm, nurse call, paging, generator, emergency power and breaker coordination.

**451.3.10.5** All spaces occupied by people, machinery and equipment within buildings, and the approaches thereto, and parking lots, shall have electric lighting.

**451.3.10.6** Patients' recovery rooms shall have general lighting. Fixed lights not switched at the door shall have switch controls convenient for use at the luminaries. All switches for control of lighting in recovery areas shall be of the quiet operating type.

**451.3.10.7** Operating rooms shall have general lighting for the room in addition to localized specialized lighting provided by a special lighting unit required at the surgical table. The type of special lighting unit shall be as specified by the functional program of the facility. Each special lighting unit for localized lighting at the surgical table shall be permanently installed and permanently connected to an independent circuit that shall be powered from the critical branch. In addition, a minimum of one general purpose lighting fixture shall be powered from a normal circuit in all operating rooms.

**451.3.10.8** The number and circuitry of all duplex receptacles in operating rooms, cardiac catheterization laboratories, and post-operative recovery rooms, shall be provided as follows:

**451.3.10.8.1** A minimum of four duplex receptacles shall be connected to the critical branch of the essential electrical system.

**451.3.10.8.2** A minimum of two duplex receptacles shall be connected to a normal power circuit or to a critical branch circuit from a different transfer switch.

**451.3.10.8.3** There shall be no more than two duplex receptacles per circuit for all receptacles for the areas as listed.

**451.3.10.9** All receptacles shall have engraved cover plates to indicate the panel board and circuit numbers powering the device.

**451.3.10.10** Branch circuit over-current devices shall be readily accessible to nursing staff and other authorized personnel.

**451.3.10.11** Nonmetallic sheathed cable or similar systems are not permitted for power and lighting wiring in any facility.

**451.3.10.12** Panel boards located in spaces subject to storage shall have the clear working space per Chapter 27 of the *Florida Building Code, Building*. "ELECTRICAL ACCESS-NOT FOR STORAGE" shall be permanently marked on the floor and wall about the panel. Panel boards shall not be located in an exit access corridor or in an unenclosed space or area that is open to an exit access corridor. Panel boards may be located inside of a room or closet that opens into an exit access corridor only when the room or closet is separated from the exit access corridor by a partition and door that comply with this code.

**451.3.10.13** The electrical system shall have coordinated short circuit protection.

**451.3.10.14** Provide color coding for the junction boxes for the branches of the essential electrical system.

**451.3.10.15** Duplex receptacles for general use shall be installed approximately 50 feet (15, 240 mm) apart in all general purpose corridors and within 25 feet (7620 mm) of ends of corridors.

**451.3.11 Nurses' calling system.**

***Change Section 451.3.11.1 to read as shown:***

**451.3.11.1** Wired or wireless type nurse call systems shall be permitted if they have been tested and approved by a national recognized testing laboratory (NRTL) to meet the requirements of UL 1069, 7th edition published October 12, 2007 as referenced in Chapter 35 of this code. All wireless systems shall be tested and approved by a national recognized testing laboratory (NRTL) to meet the requirements of Section 49, “Wireless Systems” of UL 1069, 7th edition as referenced in Chapter 35 of this code. All nurse call systems whether wired or wireless shall have electronically supervised visual and audible annunciation ~~be~~ ~~supervised~~ in accordance with the ~~requirements~~ supervision criteria of UL 1069, 7th edition, for ~~wired and~~ wireless nurse call systems and tested and approved by a nationally recognized testing laboratory (NRTL) to meet those requirements.

**451.3.11.2** In facilities which contain more than eight recovery beds, or where recovery beds are not in view from the nurse's station, a nurses' calling system shall be provided. Each recovery bed shall be provided with a call button. Two call buttons serving adjacent beds may be served by one calling station. Call shall activate a visual and audible signal at the nurses' station and in the clean workroom and soiled workroom. Call shall also activate a corridor dome light located at each patient recovery position.

**451.3.11.3** A nurses' call emergency system shall be provided at each patient toilet and dressing room. Activation shall be by a pull cord conveniently located for patient use. This system will activate distinct audible and visual signals in the recovery room nurses' station and in the surgical suite nurses' station. The emergency call system shall be designed so that signal light activation will remain lighted until turned off at patient's calling station.

**451.3.11.4** A corridor dome light shall be located directly outside of any patient use area that is equipped with a nurse call system.

**451.3.12 Fire alarm systems.**

**451.3.12.1** A fire alarm annunciator panel shall be provided per facility or building within the Ambulatory Surgical Center (ASC) at a location that is constantly attended  during the facility's hours of operation and shall annunciate any fire alarm in the building from any manual or automatic fire alarm device. The panel shall indicate the zone of actuation of the alarm, and there shall be a trouble signal indicator.

**451.3.12.2** A shared building fire alarm system shall be permitted.

**451.3.12.3** Each smoke compartment shall be annunciated as a separate fire alarm zone. A fire alarm system zone shall not include rooms or spaces in other smoke compartments and shall be limited to a maximum area of 22,500 square feet (2090 m2).

**451.3.13 Emergency Electrical Service.** (Reference The *Guidelines* for other requirements.)

**451.3.13.1** A Type 1 essential electrical system shall be provided in ambulatory surgical centers as described in [NFPA 99](javascript:vo();), *Health Care Facilities*. The emergency power for this system shall meet the requirements of a Level 1, Type 10, Class 8 generator as described in [NFPA 110](javascript:vo();), *Emergency Standby Power Systems.*

**451.3.13.2** In new construction, the normal main service equipment shall be separated from the emergency distribution equipment by locating it in a separate room. Transfer switches shall be considered emergency distribution equipment for this purpose.

**451.3.13.3** The generator remote annunciator shall be located in a location that is staffed during the hours of operation of the ambulatory surgical center.

***Change Section 451.3.13.4 to read as shown:***

**451.3.13.4** Switches for critical branch lighting shall be totally separate from normal switching. ~~The devices or cover plates shall be of a distinctive color.~~ Critical branch switches may be adjacent to normal switches. Switches for life safety lighting are not permitted except as required for dusk-to-dawn automatic control of exterior lighting fixtures.

**451.3.13.5** There shall be selected life safety lighting provided at a minimum of 1 footcandle (10 lux) and designed for automatic dusk-to-dawn operation along the travel paths from the exits to the public way or to safe areas located a minimum of 30 feet (9.144 m) from the building.

**451.3.13.6** A minimum of one elevator serving any patient treatment floor shall be in compliance with Section 451.3.5 of this code and shall be connected to the equipment branch of the essential electric system and arranged for manual or automatic operation during loss of normal power.

**451.3.13.7** If a day tank is provided, it shall be equipped with a dedicated low level fuel alarm and a manual pump. The alarm shall be located at the generator derangement panel.

**451.3.13.8** Transfer switch contacts shall be of the open type and shall be accessible for inspection and replacement.

***Add Section 451.3.13.9 to read as shown:***

**451.3.13.9** Electric lighting required to provide care and service to the patient occupied areas and the necessary patient support areas shall be connected to the essential electrical system.

***Add Section 451.3.14 to read as shown:***

**451.3.14 Fire Protection** An Ambulatory Surgical Center (ASC) located in a building containing a fire protection sprinkler system, shall be provided with a dedicated supply main serving only the space occupied by the ASC when the ASC is located on the same floor of the building with other building tenants. The supply main shall originate at the fire main piping riser serving the floor the ASC space is occupying. The ASC supply main shall be equipped with an indicating control valve containing a tamper switch installed at the tap to the building fire riser in a readily accessible location. The valve shall have a permanent tag identifying the supply main as that of the ASC.

***Add Section 451.3.15 to read as shown:***

**451.3.15 Medical Gas** If there is a piped medical gas installation in the ASC, it shall comply with the requirements of NFPA 99 Health Care Facilities Code.

***Section 452 – Birthing Centers***

***Add Florida specific requirements from Section 422 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 452**

**BIRTHING CENTERS**

**452.1 Scope.** All birthing centers shall comply with the following design and construction standards as described herein.

**Note:** Other administrative and programmatic provisions may apply. See Agency of Health Care Administration [AHCA] Rule 59A-11, *Florida Administrative Code* and Chapter 383, *Florida Statutes*.

**452.2 Physical environment, water supply and fire safety.**

**452.2.1** At least one birthing room shall be maintained which is adequate and appropriate to provide for the equipment, staff, supplies and emergency procedures required for the physical and emotional care of a maternal client, her support person and the newborn during labor, birth, and the recovery period.

**452.2.2** The birth center shall be designed to provide adequate space for the following:

**452.2.2.1** Birth rooms shall be located to provide unimpeded, rapid access to an exit of the building which will accommodate emergency transportation vehicles.

**452.2.2.2** Adequate fixed or portable work surface areas shall be maintained for use in the birth room.

**452.2.2.3** A separate space for a clean area and a contaminated area; if it is not feasible to provide such separate areas, special procedures shall be established for the disposal of infectious waste. Sanitary waste containers, soiled linen containers, storage cabinets and an autoclave, pressure cooker or other effective sterilization equipment shall be available.

**452.2.2.4** Prenatal and postpartum examinations which will provide privacy for the patient, hand-washing facilities and the appropriate equipment for staff.

**452.2.2.5** Medical record storage, client interviews, instruction and waiting rooms.

**452.2.3** **Toilet and bathing facilities.**

**452.2.3.1** A toilet and lavatory shall be maintained in the vicinity of the birth room.

**452.2.3.2** Hand-washing facilities shall be in or immediately adjacent to the birth room.

**452.2.3.3** A bathtub or shower shall be available for client use.

**452.2.3.4** All floor surfaces, wall surfaces, water closets, lavatories, tubs, showers, shall be kept clean, and all appurtenances of the structures shall be of sound construction, properly maintained, in good repair and free from safety hazards.

**452.2.4** There shall be provisions and facilities for secure storage of personal belongings and valuables of clients.

**452.2.5** There shall be provisions for visual privacy for each maternal client and her support person.

**452.2.6** Hallways and doors providing access and entry into the birth center and birth room shall be of adequate width and conformation to accommodate maneuvering of ambulance stretchers and wheelchairs.

**452.2.7** All areas of the facility shall be well lighted and shall have light fixtures capable of providing at least 20 footcandles (200 lux) of illumination at 30 inches (762 mm) from the floor to permit observation, cleaning and maintenance. Light fixtures shall be properly maintained and kept clean.

**452.2.8** All housing facilities shall have adequate ventilation and be kept free of offensive odors.

**452.2.8.1** If natural ventilation is utilized, the opened window area for ventilation purposes shall be equal to one-tenth of the floor space in the residential area.

**452.2.8.2** When mechanical ventilation or cooling systems are employed, the system shall be properly maintained and kept clean. Intake air ducts shall be designed and installed so that dust or filters can be readily removed. In residence areas and segregation rooms with solid doors, mechanical ventilation systems shall provide a minimum of 10 cubic feet (.3 m3) of fresh or filtered recirculated air per minute for each client occupying the area.

**452.2.8.3** All toilet rooms shall be provided with direct openings to the outside or provided with mechanical ventilation to the outside.

**452.2.9** Adequate heating and cooling facilities shall be provided to maintain a minimum temperature of 68°F (20°C) and maximum temperature of 78°F (26°C) at a point 20 inches (508 mm) above the floor.

**452.2.10** All heating devices shall comply with fire prevention provisions found in Rule 69A-3, Fire Prevention, General Provision, *Florida Administrative Code*.

**452.2.11 Laundry**.

**452.2.11.1** Where laundry facilities are provided, laundry facilities shall be of sound construction and shall be in good repair and clean. Adequate space shall be provided and areas shall be designated for the separation of clean and soiled clothing, linen and towels.

**452.2.11.2** Laundry rooms shall be well lighted and properly ventilated. Clothes dryers shall be vented to the exterior.

**452.2.12** **Insect and rodent control.** Facilities shall be kept free of all insects and rodents. All outside openings shall be effectively sealed or screened with 16 mesh screening or equivalent to prevent entry of insects or rodents.

**452.2.13** **Outdoor areas.** Outdoor areas shall be well drained. Indoor and outdoor recreational areas shall be provided with safeguards designed for the needs of the residents.

**452.2.14 Water supply.**

**452.2.14.1** Drinking water shall be accessible to all clients. When drinking fountains are available, the jet of the fountain shall issue from a nozzle of nonoxidizing impervious material set at an angle from the vertical. The nozzle and every other opening in the water pipe or conductor leading to the nozzle shall be above the edge of the bowl so that such nozzle or opening will not be flooded in case a drain from the bowl of the fountain becomes clogged. The end of the nozzle shall be protected by nonoxidizing guards to prevent persons using the fountain from coming into contact with the nozzle. Vertical or bubbler drinking fountains shall be replaced with approved type water fountains or be disconnected. When no approved drinking fountains are available, clients shall be provided with single service cups which shall be stored and dispensed in a manner to prevent contamination. Common drinking cups are prohibited.

**452.2.14.2** Hot and cold running water under pressure and at safe temperature, not to exceed 110°F (43°C) to prevent scalding, shall be provided to all restrooms, lavatories and bathing areas.

**452.2.15 Sewage disposal.**

**452.2.15.1** All sanitary facilities shall comply with the requirements of the *Florida Building Code, Plumbing*.

**452.2.15.2** For facilities with nine or more birth rooms, mop sinks or curbed areas with floor drains shall be available in convenient locations throughout the facility to facilitate cleaning and for the proper disposal of cleaning water.

**452.2.16** **Fire control.** Each birth center shall provide fire protection through the elimination of fire hazards, the installation of necessary safeguards such as extinguishers and smoke alarms to insure rapid and effective fire control.

**452.2.16.1** To safeguard all clients, the birth center shall have:

**452.2.16.1.1** "No Smoking" signs prominently displayed in those areas where smoking is not permitted.

**452.2.16.1.2** Fire regulations and evacuation route prominently posted.

**452.2.16.2** The written fire control plan approved by the appropriate local fire authority shall contain provisions for prompt reporting of all fires, extinguishing fires, protection of personnel and guests, evacuation, and cooperation with fire-fighting authorities.

**452.2.16.3** New centers' carpeting must comply with the maximum flame spread rating of 75 in accordance with ASTM E 84 test as required under Chapter 69A-3.012 Standards of the National Fire Protection Association Adopted, Florida Administrative Code. Those existing centers not having affirmative evidence of complying with such flame spread rating shall establish fire control measures including the prohibition of smoking in carpeted areas. Such procedures shall be approved by the authority having jurisdiction.

**Florida Specific Amendment**

***Section 453 – State Requirements for Educational Facilities***

***Add Florida specific requirements from Section 423 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 453**

**STATE REQUIREMENTS FOR EDUCATIONAL FACILITIES**

**453.1 Scope**: **Public educational facilities.** Public educational facilities shall comply with the *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal. These are minimum standards; boards may impose more restrictive requirements. Additional requirements for public educational facilities in Florida, including public schools and public Florida colleges, are found in these standards.

**Note:** Other administrative and programmatic provisions may apply. See Department of Education Rule ~~6-2~~ 6A-2.0010 and Chapter 1013, *Florida Statutes*.

**453.2 Public schools and Florida colleges general requirements.**

**453.2.1** **Owner.** Each school board and Florida college board of trustees is deemed to be the owner of facilities within its respective jurisdiction. Boards shall provide for enforcement of the *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal, including standards for health, sanitation, and others as required by law.

***Change Section 453.2.2 to read as shown:***

**453.2.2** **Exemption from local requirements.** All public educational and ancillary plants constructed by a school board or a Florida college board are exempt from all other state, county, district, municipal, or local building codes, interpretations, building permits, and assessments of fees for building permits, ordinances, road closures, and impact fees or service availability fees as provided in Section 1013.371(1)(a), *Florida Statutes*.

**453.3 Code enforcement.**

**453.3.1** **School boards and Florida college boards.** Section 553.80(6), *Florida Statutes*, provides options for plan review services and inspections by school boards and Florida college boards.

**453.3.2** **Owner review and inspection.** A school board or Florida college board which undertakes the construction, remodeling, renovation, lease, or lease-purchase of any educational plant or ancillary facility, or day labor project, regardless of cost or fund source, shall review construction documents as required by law in Section 1013.38, *Florida Statutes,* and Section 553.80(6), *Florida Statutes*, and shall ensure compliance with requirements of law, rule, and the *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal. Section 553.80(6), *Florida Statutes*, states that district school boards and Florida college boards shall provide for plan review and inspections for their projects. They shall use personnel certified under Part XII of Chapter 468, *Florida Statutes* to perform the plan reviews and inspections or use one of the options provided in Section 1013.38, *Florida Statutes*. Under this arrangement, school boards and Florida college boards are not subject to local government permitting, plan review, and inspection fees.

**453.3.3** **Local government review and inspection.** As an option to the owner providing plan review and inspection services, school boards and Florida college boards may use local government code enforcement officers who will not charge fees more than the actual labor and administrative costs for the plan review and inspections. Local government code enforcement offices shall expedite permitting. Any action by local government not in compliance with Section 553.80(6), *Florida Statutes*, may be appealed to the Florida Building Commission, which may suspend the authority of that local government to enforce the *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal on the facilities of school boards and Florida college boards.

**453.3.4** **Other regulatory agencies.** Boards shall coordinate the planning of projects with state and regional regulatory and permitting agencies, as applicable. Other state or local agencies may inspect new construction or existing facilities when required by law; however, such inspections shall be in conformance with the code as modified by this section.

**453.3.5 Day labor projects.** Any one construction project estimated to cost $300,000 or less where bonafide board employees or contracted labor provide the work. Day labor projects are subject to the same *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal as new construction.

***Change Section 453.3.6 to read as shown***

**453.3.6 Routine maintenance.** Maintenance projects are subject to the same *Florida Building Code* and Florida Fire Prevention Code as adopted by the State Fire Marshal as new construction. Chapter 489, *Florida Statutes*, exempts boards from the use of a licensed general contractor for projects up to $200,000 ~~$300,000~~ where bonafide board employees provide the work. Maintenance projects ~~estimated to cost more than $300,000 and~~ which include construction, renovation and/or remodeling, shall be reviewed for compliance with the code.

**453.3.7** **Certificate of occupancy.** New buildings, additions, renovations, and remodeling shall not be occupied until the building has received a certificate of occupancy for compliance with codes that were in effect on the date of permit application.

**453.3.8** Reuse and prototype plans shall be code updated with each new project.

**453.4** **Reference documents.** School Boards and Florida College Boards of Trustees. In addition to complying with the Florida Building Code and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal, and other adopted standards and this section, public educational facilities and sites shall comply with applicable federal and state laws and rules.

**453.4.1** **Rule ~~6-2~~ 6A-2.00.10 [State Requirements for Educational Facilities (SREF) ].** A Florida Department of Education document which includes required design standards, standards for rehabilitation of historical resources, capital outlay project process requirements, and various agencies having jurisdiction during project planning and construction.

**453.4.2** **Flood Resistant Construction.** Educational facilities in flood hazard areas shall comply with ASCE 24.

***Change Section 453.4.3 to read as shown***

**453.4.3** Florida statutes and state rules. Including, but not limited to, Chapters ~~240,~~ 255, 468, 471, 481, 489, 553, 633, 1013, and Section 287.055, *Florida Statutes*, and various state rules as applicable to specific projects.

**453.4.4 Accessibility requirements for children's environments.** U.S. Department of Justice and the U.S. Architectural and Transportation Barriers Compliance Board.

***Change Section 453.4.5 to read as shown***

**453.4.5 Handbook for public playground safety.** Playgrounds and equipment shall be designed and installed using the ~~Handbook for~~ Public Playground Safety Handbook by the U. S. Consumer Product Safety Commission, and the ASTM/CPSC Playground Audit Guide as applicable.

**453.4.6 ANSI Z53.1.** American National Standard Safety Color Code for marking Physical Hazards, is used in shops where machinery requires marking and safety zones.

**453.4.7** **ASCE 7.** American Society of Civil Engineers.

***Change Section 453.4.8 to read as shown***

**453.4.8** *Life Cycle Cost Guidelines for Materials and Building Systems for Florida's Public Educational Facilities*, available from the Department of Education, Office ~~Bureau~~ of Educational Facilities shall be considered.

**453.5 Definitions.**

**453.5.1** **"Assembly"** occupancies are buildings or portions of buildings used for gatherings of 50 or more persons, such as auditoriums, gymnasiums, multipurpose rooms, classrooms and labs, cafeterias, stadiums, media centers and interior courtyards. Assembly occupancies include adjacent and related spaces to the main seating area, such as stages, dressing rooms, workshops, lobbies, rest rooms, locker rooms, and store rooms. School board and Florida college facilities shall follow the requirements of *Florida Fire Prevention Code* as adopted by the State Fire Marshal for assembly spaces.

**453.5.2** **"Board"** means a district school board and a Florida college board of trustees.

***Change Section 453.5.3 to read as shown***

**453.5.3 "Boiler"** is a fuel-fired, heat-producing appliance with a minimum input capacity of (60,000) Btu per hour and intended to supply hot water or steam. Boilers and the inspection of boilers shall comply with Section 554, *Florida Statutes*, the Boiler Safety Act ~~of 1987~~.

**453.5.4** **"Certificate of occupancy"** is documentation issued by an authority having jurisdiction which indicates inspection and approval of completion of a construction project pursuant to the requirements of Florida law.

***Change Section 453.5.5 to read as shown***

**453.5.5** **"Courtyard"** is a court or enclosure adjacent to, or surrounded by, a building(s) and/or walls.

**453.5.5.1** "Exterior courtyard" is a courtyard which is not roofed, has a minimum width of 40 feet (1219 mm), and

a. has an opening a minimum width of 40 feet (1219 mm), with no obstructions, on at least one end, or

b. has fences between the buildings for security purposes, and the required exiting capacity of the courtyard is provided for by means of doors or gates from the courtyard.

An exterior courtyard may be considered exterior space and used for exiting of adjacent spaces. For an exterior courtyard with an opening between 40 feet (1219 mm) and 60 feet wide (18,288 mm), the building walls and wall openings must meet the requirements of *Florida Building Code, Building* Tables 601 and 602 and the maximum travel distance to the courtyard opening/exit shall not exceed 150 feet (45,720 mm) from any point within the courtyard. If the minimum courtyard width exceeds 60 feet (18,288 mm), the travel distance to a courtyard opening/exit may exceed 150 feet (945 720 mm).

**453.5.5.2** **"Enclosed courtyard"** is a courtyard which is not roofed by more than 50 percent of the courtyard area and which is substantially surrounded by a building(s) on two sides or more and each opening to the exterior is less than 40 feet (1219 mm) in width. The courtyard area shall be calculated for maximum occupancy as an assembly space and the number and size of remotely located exits shall be calculated for the maximum possible load. The maximum possible load is the greater of the calculated capacity of the courtyard or the load imposed by the surrounding spaces. An enclosed courtyard may be used as a component of exit access provided that the walls and wall openings meet the requirements of *Florida Building Code, Building* Tables 601 and 602 and the maximum travel to the exit discharge does not exceed 150 feet (45 720 mm) from any point within the enclosed courtyard. An enclosed courtyard cannot serve as the exterior for exiting or for emergency rescue openings.

***Change Section 453.5.5.3 to read as shown***

**453.5.5.3 "Roofed courtyard"** is a courtyard which is roofed by more than 50 percent of the courtyard area in any manner. Roofed courtyards ~~Courtyards~~ may be used for assembly spaces and shall ~~may~~ not be used as a component of exiting from adjacent spaces.

**453.5.6** **"Facility"** is additionally defined as follows:

**453.5.6.1** "Ancillary facility" is a building or other facility necessary to provide district-wide support services, such as an energy plant, bus garage, warehouse, maintenance building, or administrative building.

**453.5.6.2** **"Ancillary plant"** is buildings, site, and site improvements necessary to provide district-wide vehicle maintenance, storage, building maintenance activities, or administrative functions necessary to provide support services to an educational program.

**453.5.6.3** **"Auxiliary facility"** consists of the support spaces located at educational facilities and plants which do not contain student stations but are used by students, such as libraries, administrative offices, and cafeterias.

**453.5.6.4** **"Educational facility"** consists of buildings and equipment, structures, and special educational use areas that are built, installed, or established to serve primarily the educational purposes and secondarily the social and recreational purposes of the community.

**453.5.6.5** **"Educational plant"** comprises the educational facilities, site, and site improvements necessary to accommodate students, faculty, administrators, staff, and the activities of the educational program.

**453.5.6.6** **"Existing facility"** is a facility owned, rented or leased.

**453.5.6.7** **"Leased facility"** is a facility not owned, but contracted for use.

**453.5.6.8** **"Permanent facility"** is a facility designed for a fixed location.

**453.5.6.9** **"Relocatable/portable facility"** is a building which is designed with the capability of being moved to a new location.

**453.5.6.10** **"Modular facility"** is a structure which, when combined with other modules and/or demountable roof and/or wall sections, forms a complete building. This facility may be relocatable.

**453.5.7 "Maintenance and repair"** is the upkeep of educational and ancillary plants including, but not limited to, roof or roofing replacement, short of complete replacement of membrane or structure; repainting of interior or exterior surfaces; resurfacing of floors; repair or replacement of glass and hardware; repair or replacement of electrical and plumbing fixtures; repair of furniture and equipment; replacement of system equipment with equivalent items meeting current code requirements providing that the equipment does not place a greater demand on utilities, structural requirements are not increased, and the equipment does not adversely affect the function of life safety systems; traffic control devices and signage; and repair or resurfacing of parking lots, roads, and walkways. Does not include new construction, remodeling, or renovation, except as noted above.

**453.5.8** **"New construction"** is any construction of a building or unit of a building in which the entire work is new. An addition connected to an existing building is considered new construction.

**453.5.9** **"Open plan building"** is any building which does not have corridors defined by permanent walls and is entirely open or divided by partitions which may be easily rearranged.

**453.5.10** **"Open plan instructional space"** is an arrangement of two or more class areas with no permanent partitions or wall separations.

***Change Section 453.5.11 to read as shown***

**453.5.11** **"Owner"** ~~of facilities within a respective jurisdiction consists of each~~ Each school board and Florida college board of trustees is deemed to be the owner of facilities within its respective jurisdiction.

**453.5.12** **"Permit"** for construction is documentation issued by an authority having jurisdiction which indicates approval of construction plans prepared pursuant to the requirements of Florida law.

**453.5.13** **"Remodeling"** is the changing of existing facilities by rearrangement of space and/or change of use. Only that portion of the building being remodeled must be brought into compliance with the *Florida Building Code* and *Florida Fire Prevention Code* as adopted by the State Fire Marshal unless the remodeling adversely impacts the existing life safety systems of the building.

**453.5.14** **"Renovation"** is the rejuvenating or upgrading of existing facilities by installation or replacement of materials and equipment. The use and occupancy of the spaces remain the same. Only that portion of the building being renovated must be brought into compliance with the *Florida Building Code* and *Florida Fire Prevention Code* as adopted by the State Fire Marshal unless the renovation adversely impacts the existing life safety systems of the building.

**453.5.15** **"Separate atmosphere"** is the individual volumes of air in a building which are divided by smoke proof barriers to limit contamination of the air by smoke and fumes during a fire.

**453.5.16** **"Separate building"** for the purpose of separate fire alarm systems or sprinkler systems is a structure separated from other buildings by 60 feet (18,288 mm) or more, or as required by other sections of this code.

**453.5.17 “**Florida college” is a public community college, public college, state college, or public junior college.

**453.5.18** "**Student-occupied space"** is any area planned primarily for use by six or more students.

**453.6 Administration of public education projects.**

**453.6.1** **Occupancy during constructio**n. School board and Florida college board facilities, or portions of facilities, shall not be occupied during construction unless exits, fire detection and early warning systems, fire protection, and safety barriers are continuously maintained and clearly marked at all times. Construction on an occupied school board site shall be separated from students and staff by secure barriers. Prior to issuance of the notice to proceed, a safety plan shall be provided by the contractor which clearly delineates areas for construction, safety barriers, exits, construction traffic during the various phases of the project and when conditions change. Where heavy machinery, as is used for earth moving or scraping, is required to work on a school board's occupied site, the work shall be separated from occupants by secure double barriers with a distance of 10 feet (3048 mm) in between. New construction, remodeling or renovations in existing facilities shall not reduce the means of egress below the requirements for new buildings; safe means of egress from a student-occupied space may be accomplished as authorized by NFPA 101, Florida edition as adopted by the *Florida Fire Prevention Code*. New construction (additions) shall not block or reduce safe means of egress.

**453.6.2** **Contractor toxic substance safety precautions.** When hazardous chemicals as defined by 29 CFR 1910.1200, OSHA Hazard Communication Standard are to be used during the maintenance, renovation, remodeling, or addition to an existing facility, the contractor shall notify the administrator in writing at least three working days before any hazardous chemical is used. The notice shall indicate the name of each of the hazardous chemicals to be used, where and when they will be used, and a copy of a Material Safety Data Sheet (MSDS) for each hazardous chemical. The contractor shall comply with the safety precautions and handling instructions set forth in the MSDS. Copies of hazardous waste manifests documenting disposal shall be provided to the facility's administrator who will notify occupants of the anticipated presence of toxic substances during the maintenance, renovation, remodeling, or addition to an existing facility.

**453.6.3** **Flammable or explosive substances.** No flammable or explosive substances or equipment shall be introduced during a remodeling or renovation project in a facility of normally low or ordinary hazard classification while the building is occupied.

**453.7 Life safety.**

***Change Section 453.7.1 to read as shown:***

**453.7.1 Separate exits.** In assembly occupancies, each required exit from an assembly space must exit into a separate atmosphere or to the exterior, to be considered as a separate exit.

**453.7.2** **Exit access.** Exit access shall not be through a toilet room, storage room, or similar space, or any space subject to being locked.

**453.7.3 Location of fire extinguishers and blankets**. Fire extinguishers may be located inside student-occupied spaces provided they are placed adjacent to the primary exit door, and the room door remains unlocked when the facility is occupied, and a permanently affixed sign, with a red background and white letters, reading "FIRE EXTINGUISHER INSIDE" is placed on the outside adjacent to the door. Fire extinguisher cabinets shall not be locked. Fire blankets shall be located in each laboratory and each shop where a fire hazard may exist. Fire extinguishers and fire blankets shall be readily accessible and suitable for the hazard present and shall not be obstructed or obscured from view. Extinguishers and blankets shall be on hangers or brackets, shelves, or cabinets so that the top of the extinguisher or blanket is not more than 54 inches (1318 mm) above finish floor (AFF) and complies with state and federal accessibility requirements. All extinguishers shall be installed and maintained in accordance with NFPA. Extinguishers shall remain fully charged and operable at all times and have a current tag to indicate compliance.

**453.7.4 Common fire alarm.** Buildings within 60 feet (18,288 mm) of each other shall have a common fire alarm system. Emergency shelters shall have the fire alarm panel located in the space identified as the shelter manager's office.

**453.7.5 Fire alarm sending stations.** Sending stations may be located inside student-occupied spaces, adjacent to the primary exit door only if the door to the occupied space is unlocked at all times while the facility is occupied. When located inside a student occupied space, a permanently affixed sign reading "FIRE ALARM PULL STATION INSIDE" shall be placed outside that space adjacent to the door. This sign shall have a red background with white letters. Sending stations shall be mounted to meet accessibility requirements.

**453.7.6 Automatic shut off.** The fire alarm system shall shut off gas and fuel oil supplies which serve student-occupied spaces or pass through such spaces. The shutoff valve shall be located on the exterior at the service entrance to the building. The shutoff valve shall be of the manual reset type.

**453.7.6.1 Kitchen gas supplies**. Kitchen gas supplies shall be shut-off by activation of the kitchen hood fire suppression system. The shut-off valve shall be installed in accordance with the manufacturer's instructions and recommendations.

**453.7.6.2. Emergency power.** The fire alarm system shall not shut off gas supplies which serve emergency power sources.

**453.7.7 Unoccupied rooms and concealed spaces**. Rooms or spaces for storage, custodial closets, mechanical rooms, spaces under stages with wood structures and other unoccupied or unsupervised spaces in a building shall have automatic fire alarm system detector devices installed. Any concealed space with exposed materials having a flame spread rating greater than Class A, including crawl spaces under floors, interstitial spaces between ceiling and floor or roof above and attic spaces, shall be equipped with heat detector devices. Smoke and heat detector devices shall be installed in accordance with NFPA 72.

**453.7.7.1 Fully sprinklered buildings**. In fully sprinklered buildings, fire alarm detection devices are not required except where specified in the *Florida Fire Prevention Code*.

***Change Section 453.7.8 to read as shown***

**453.7.8 Boiler rooms.** Each boiler room shall be separated from the remainder of the building by one-hour fire-resistance rated construction or shall be separate from other buildings by 60 feet (18 288 mm), and shall have an out-swinging door opening directly to the exterior. A fire door swinging into the boiler room shall also be provided for any opening into the interior of the building. There shall be no opening into any corridor or area designed for use by students.

***Add Section 453.7.9 to read as shown***

**453.7.9 Exit passageways and horizontal exits.** Exit passageways referenced in Section 1023, *FBC - Building*, and horizontal exits referenced in Section 1025, *FBC - Building* shall be prohibited.

**453.8 General requirements for new construction, additions, renovation, and remodeling.**

**453.8.1 Codes and standards.** Educational facilities owned by school boards and Florida college boards shall meet the construction requirements of the *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal, state and federal laws and rules, and this section for Florida's public educational facilities for new construction, remodeling and renovation of existing facilities. This is a minimum standard; boards may impose more restrictive safety and level of quality standards for educational, auxiliary, and ancillary facilities under their jurisdiction, provided they meet or exceed these minimum requirements.

**453.8.1.1 Educational occupancy.** School board educational facility projects whether owned, lease-purchased or leased shall comply with the educational occupancy and assembly occupancy portions of the above referenced codes as applicable, except where in conflict with this section. The support spaces such as media centers, administrative offices and cafeterias and kitchens located within educational facilities are not separate occupancies.

**453.8.1.2 Business occupancy**. Florida college board educational facility projects whether owned, lease-purchased or leased shall comply with the business occupancy and the assembly occupancy of the above referenced codes as applicable, except where in conflict with this section.

**453.8.1.3 Ancillary facility**. School board and Florida college board ancillary facilities such as warehouses or maintenance buildings, shall use the applicable occupancy section of the *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal. Ancillary facilities on educational plant sites shall be separated from the educational facility as required by code.

**453.8.2 Space standards.** School board and Florida college board facility sizes shall use standards in the "Size of Space and Occupant Design Criteria Table" found in the Department of Education document, "State Requirements for Educational Facilities (SREF)." Exiting from occupied spaces shall comply with Table 1004.1.1 of the *Florida Building Code, Building*.

**453.8.3 Construction type.** School board and Florida college buildings including auxiliary, ancillary and vocational facilities shall comply with the following:

**453.8.3.1 Noncombustible Type I, II or IV.** The minimum construction type for one- and two-story public educational facilities shall be noncombustible Type I, II or IV construction or better.

**453.8.3.1.1** Interior nonload-bearing wood studs or partitions shall not be used in permanent educational and auxiliary facilities or relocatable buildings.

**Exception:** Historic buildings to maintain the fabric of the historic character of the building.

**453.8.3.2 Type I.** Facilities three stories or more shall be Type I construction.

**453.8.3.3 Type IV.** When Type IV construction is used, wood shall be exposed and not covered by ceilings or other construction.

**453.8.3.4 Exceptions to types of construction:**

1. Covered walkways open on all sides may be Type V construction.

2. Single story dugouts, press boxes, concession stands, related public toilet rooms, detached covered play areas, and nonflammable storage buildings that are detached from the main educational facility by at least 60 feet (1829 mm), may be Type V construction.

**453.8.4 Standards for remodeling and/or renovation projects.** Portions of buildings being remodeled and/or renovated shall be brought into compliance with current required *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal as required by the plan review authority in its best judgment.

**453.8.4.1** An automatic fire sprinkler system is not required in existing educational buildings unless 50 percent of the aggregate area of the building is being remodeled

**453.8.5 Leased facilities**. Leased facilities shall be brought into compliance with applicable occupancy requirements of the *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal prior to occupancy.

**453.8.6 Asbestos prohibited**. The federal Asbestos Hazard Emergency Response Act, (AHERA) 40 CFR, Part 763, as revised July 1, 1995, prohibits the use of any asbestos containing materials in any public education construction project and requires certification of same by the architect of record.

***Change Section 453.8.7 to read as shown***

**453.8.7 Life cycle cost guidelines for materials and building systems.** An analysis shall be included, as required by Section 1013.37(1), *Florida Statutes*, which evaluates building materials and systems, life cycle costs for maintenance, custodial, operating, and life expectancy against initial costs, as described in Section 1013.37(1)(e)4, *Florida Statutes*. Standards for evaluation of materials are available from the department in a publication entitled *Life Cycle Cost Guidelines for materials and Building Systems for Florida's Public Educational Facilities*.

***Change Section 453.8.8 to read as shown***

**453.8.8 Safe school design**. School boards should design educational facilities and sites including pre-K through 12, vocational and Florida colleges to enhance security and reduce vandalism through the use of "safe school design" principles. Safe school design strategies are available from the Florida Department of Education, Office of Educational Facilities in a publication titled Florida Safe School Design Guidelines ~~DOE/educational facilities~~ and include but are not limited to the following:

**453.8.8.1** **Natural access and control of schools and campuses.**

**453.8.8.2** Natural surveillance of schools and campuses both from within the facility and from adjacent streets by removing obstructions or trimming shrubbery.

**453.8.8.3** School and campus territorial integrity; securing courtyards, site lighting, building lighting.

**453.8.8.4** Audio and motion detection systems covering ground floor doors, stairwells, offices and areas where expensive equipment is stored.

**453.8.8.5** Designs which will promote the prevention of school crime and violence. Exterior architectural features which do not allow footholds or handholds on exterior walls, tamperproof doors and locks, nonbreakable glass or shelter window protection system; also landscaping and tree placement should be designed so they do not provide access to roofs by unauthorized persons. Sections of schools commonly used after hours should be separated by doors or other devices from adjacent areas to prevent unauthorized access. Install locks on roof hatches; apply slippery finishes to exterior pipes.

**453.8.8.6** Exterior stairs, balconies, ramps, and upper level corridors around the perimeter of buildings should have open-type handrails or other architectural features to allow surveillance.

**453.8.8.7** Open areas, such as plazas, the building's main entrance, parking lots, and bicycle compounds should be designed so they are visible by workers at workstations inside the buildings.

**453.9 Structural design.**

**453.9.1 Load importance factor.** Structural design shall comply with code requirements and wind loads as stipulated by the *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal. Design shall be based on ASCE 7, with a wind speeds determined from Figure 26.5-1B.

**453.10 Site requirements.**

**453.10.1 Fencing.** Fencing for school board educational plants shall be of a material which is nonflammable, safe, durable, and low maintenance, provides structural integrity, strength and aesthetics appropriate for the intended location. Fences shall have no jagged or sharp projections. Fence heights shall be in compliance with local zoning regulations. Access shall be provided for maintenance machinery. Prohibited materials for nonagricultural educational plants include razor wire, barbed wire and electrically charged systems.

**453.10.1.1 Required locations.** Fencing is required to separate students from potential harm, and shall be provided in the following locations:

**453.10.1.1.1 Kindergarten through grade 12.** Exposed mechanical, plumbing, gas, or electrical equipment located on ground level.

**453.10.1.1.2 Kindergarten through grade 5.** Special hazards as identified by the authority having jurisdiction including retention ponds whose permanent water depth or whose water depth over a 24-hour period exceeds 1 foot (305 mm), deep drainage ditches, canals, highways, and play fields adjacent to roadways.

**453.10.1.1.3 Kindergarten through grade 12**. All child care and kindergarten play areas.

**453.10.2 Walks, roads, drives, and parking areas.** Walks, roads, drives, and parking areas on educational and ancillary sites shall be paved. Roads, drives, and parking areas shall be in compliance with Department of Transportation (DOT) road specifications and striped in compliance with DOT paint specifications. All paved areas shall have positive drainage.

**453.10.2.1 Covered walks.** All buildings in K-12 educational facilities shall be connected by paved walks and accessible under continuous roof cover. New relocatable classroom buildings shall be connected to permanent buildings by paved covered walks where applicable. Roofs for covered walks shall extend 1 foot (305 mm) beyond each side of the designated walkway width. Gutters or other water funneling devices shall prevent storm water from pouring onto or draining across walks.

**453.10.2.2 Accessible walks and bridges.** Accessible walks shall connect building entrance(s) to accessible parking, public transportation stops, public streets, sidewalks, loading and drop-off zones, and other facilities within the site as required by the accessibility standards. School board sites where educational plants are separated by highways shall be connected by overhead pedestrian bridges.

**453.10.2.3 Drainage**. The location of all drains, grates, drop inlets, catch basins, other drainage elements and curb cuts shall be out of the main flow of pedestrian traffic.

***Change Section 453.10.2.4 to read as shown:***

**453.10.2.4 Vertical drops.** Walls, railings, or other physical barriers which are at least a minimum 12 inches (305 mm) in height, shall define and protect any vertical drop between joining or abutting surfaces of more than 6 inches (152 mm) but less than 18 inches (457 mm) in height. Any vertical drop of 18 inches (457 mm) or more shall be protected by a wall or guardrail a minimum of 42 inches (1067 mm) in height.

**Exception:** In assembly seating where guards in accordance with Section 1028.14 are permitted and provided.

**453.10.2.5 Roads and streets.** Educational and ancillary site access shall consist of a primary road and another means of access to be used in the event the primary road is blocked. Stabilized wide shoulders of the primary road, unobstructed by landscaping, planters, light fixtures, poles, benches, etc., which allow a third lane of traffic, may satisfy the requirement for the other means of access. Driveways shall not completely encircle a school plant, to allow student access to play areas without crossing roads; vehicular and pedestrian traffic shall not cross each other on the site; bus driveways and parent pick-up areas shall be separated.

**453.10.2.6 Bus drives.** Bus drives on educational sites shall be designed so that buses do not have to back up. The minimum width shall be 24 feet (7315 mm) for two-lane traffic. The turning radius on educational and ancillary sites and for turning off public access streets shall be as follows: one-way traffic, 60 feet (18,288 mm) minimum measured to the outside curb or edge of the traffic lane; two-way traffic, 60 feet (18,288 mm) minimum measured to the centerline of the road.

**453.10.2.7 Vehicle parking areas.** Vehicle parking areas shall comply with minimum parking space requirements in this section. Except for parking space requirements to meet federal and state accessibility laws, where alternate transportation or parking arrangements are available the parking area requirements may be reduced from these standards if sufficient justification documentation is provided and if the review authority approves the reduction based on the justification. Over- flow parking areas may utilize alternative parking surfaces which facilitate water absorption rather than runoff when approved for use by the review authority. This requirement usually applies to a percentage of the parking spaces, not all of them.

**Exception:** Accessible parking spaces shall be hard surface.

**453.10.2.8 Minimum parking requirements.**

**453.10.2.8.1 Faculty and staff.** One space for each member.

**453.10.2.8.2 Visitors.** One space for every 100 students.

**453.10.2.8.3 Community clinics where provided**. Ten spaces, including one accessible space.

**453.10.2.8.4 High schools.** One space for every 10 students in grades 11 and 12.

**453.10.2.8.5 Vocational schools.** One space for every two students.

**453.10.2.8.6 Florida colleges.** One space for every two students.

**453.10.2.8.7 Accessible parking**. Parking spaces designated for persons with disabilities shall comply with  the ADA*, Florida Building Code*, *Accessibility***,** and Section 316.1955, *Florida Statutes*.

**453.10.3 Site lighting required.** Design, construction, and installation of exterior security lighting for educational and ancillary facilities shall be provided for:

**453.10.3.1** Auto, bus, and service drives and loading areas.

**453.10.3.2** Parking areas.

**453.10.3.3** Building perimeter.

**453.10.3.4** Covered and connector walks between buildings and between buildings and parking.

**453.10.3.5** Lighting for parking areas. Parking area lighting standards shall be designed to withstand appropriate wind loads. Parking areas shall be illuminated to an average maintained horizontal footcandle, measured at the surface as follows:

**453.10.3.5.1** Parking areas-1 footcandle (10 lux).

**453.10.3.5.2** Covered and connector walks-1 footcandle (10 lux).

**453.10.3.5.3** Entrances/exits -2 footcandles (20 lux).

**453.10.3.6 Building exteriors.** Building exteriors, perimeters, and entrances may be illuminated to the minimum number of footcandles, measured at the surface with a suggested uniformity ratio of 2:1 as follows:

**453.10.3.6.1** Entrances-5 footcandles (50 lux).

**453.10.3.6.2** Building surrounds-1 footcandle (10 lux).

**453.10.3.7 Shielding.** Exterior lighting shall be shielded from adjacent properties.

**453.10.4 Building setbacks.** Building setbacks from the property line, including relocatables, shall, at a minimum, be 25 feet (7620 mm) or shall comply with local setback requirements if less than 25 feet (7620 mm).

**453.10.5 School board playgrounds, equipment, and athletic fields.** Playgrounds, equipment, and athletic fields shall be accessible, compatible with the educational facility served and shall comply with the following:

**453.10.5.1** Kindergarten play areas shall be separated from other play areas, fenced, and shall be directly accessed from the kindergarten classrooms.

**453.10.5.2** Playgrounds and equipment shall be designed and installed using the *Handbook for Public Playground Safety by the U.S. Consumer Product Safety Commission, and the ASTM/CPSC Playground Audit Guide* as applicable, resulting in facilities which are safe, structurally sound, vermin-proof, and do not have jagged or sharp projections.

**453.10.5.3** Direct access from the school buildings shall be provided to play areas and athletic fields without crossing public roads, on-site traffic lanes, and parking lots.

**453.10.5.4** Related facilities such as toilets, concessions, storage, shower and locker rooms, bleachers, press boxes, observation platforms, scoreboards, and dugouts shall be designed to meet code requirements and the occupant capacity anticipated for the program.

**453.10.5.5** Playgrounds shall be evenly graded and sloped to provide surface drainage.

**453.10.6 Exterior signage.** All permanent and free-standing exterior signs shall be designed to withstand appropriate wind loads. Illuminated signs shall comply with the electrical and installation requirements of the *Florida Building Code* and *Florida Fire Prevention Code* as adopted by the State Fire Marshal.

**453.10.6.1** Site signage shall not create visual barriers at entrances, sidewalks, roads or road intersections.

**453.10.6.2** Accessible routes, including parking, building directories, building identification, and accessible entrances shall be marked by exterior signage in conformance with federal and state accessibility laws.

***Change Section 453.10.7 to read as shown:***

**453.10.7 Landscaping.** Refer to Section 1013.64(5), *Florida Statutes*, for school board and Florida college requirements. Florida-friendly landscaping ~~Xeriscape~~ is defined in Section 373.185, *Florida Statutes*.

**453.10.8** **Water irrigation systems.** Water irrigation systems shall be equipped with soil moisture sensors that will override the irrigation systems cycle when soil contains sufficient moisture.

**453.10.9 Transmission line right-of-way.** Buildings, play areas, and common use areas shall not be located within a high-voltage power transmission line right-of-way.

***Change Section 453.10.10 to read as shown:***

**453.10.10 School site master plan.** New schools ~~planned after the effective date of these standards~~ shall include, as applicable: facility design capacity; floodplain locations; covered accessible walks; infrastructure locations for, and extensions of, technology, telephone, electricity, fire alarm; and, where applicable, water and sewer utilities, and relocatables.

**453.11 Wood: fire-retardant treated wood (FRTW**). FRTW shall not be used in permanent educational facilities.

**Exception:** Only FRTW which does not contain ammonium phosphates, sulfates, or halides, may be used in roof structures of noncombustible Type II ancillary facilities as allowed by the Florida Building Code, but only under the following conditions:

**453.11.1** Fire-retardant treated wood. All FRTW must meet the requirements of Section 2303.2.

**453.11.2** Inspection access panels shall be provided for annual inspection of the condition of the structure and the connectors.

**453.11.3** Evidence of compliance shall be provided.

**453.12 Roofing.**

**453.12.1 Class A materials.** All roofing materials shall be labeled Class A per ASTM E108 and shall be certified by a nationally recognized independent testing laboratory. All roofing systems shall be installed within the limitations of the test procedure for surfacing, deck cross slope, and combustibility.

**453.12.2 Insulation and moisture protection.** Insulation, moisture protection, roofing, thermal requirements, fire-proofing and firestopping shall be designed and constructed in compliance with the *Florida Building Code* and *Florida Fire Prevention Code* as adopted by the State Fire Marshal. Cellulose insulation may only be used if it is treated with fire-retardant borate based chemicals; the contractor shall retain bag labels on site for review by building inspector.

**453.12.3 Phased installation prohibited.** All new installed materials shall be sealed from moisture penetration at the end of each day. The contractor shall provide the architect/engineer (A/E) of record a "final statement of compliance" for the board.

**453.12.4 Manufacturer's one-year inspection.** The roof shall be inspected by the manufacturer's representative within one year of acceptance by the board.

***Add Section 453.12.5 to read as shown:***

**453.12.5 Exterior Stairways.** Exterior stairways serving as a means of egress shall be roofed.

**453.13 Doors and windows.**

**453.13.1 Doors.** All spaces with an occupant load of six or more students, regardless of use, shall have a door opening directly to the exterior, or as required in the *Florida Fire Prevention Code* as adopted by the State Fire Marshal, in buildings of three stories or less shall have a rescue window opening directly to the exterior, or shall be fully sprinklered. All doors and gates from spaces with an occupant load of six or more students, regardless of use or location, shall swing in the direction of exit travel, shall be of the side hinged type, and shall always be operable from the inside by a single operation and without a key.

**453.13.1.1** Doors for steam rooms, locker rooms, shower rooms and group toilet rooms shall swing in the direction of exit travel, and shall always be operable for exiting from the inside.

**453.13.1.2** No mirrors, draperies, curtains, equipment, furnishings, decorations, or other objects which may confuse, obstruct, or conceal the exit or the direction of exit shall be placed to obstruct a means of egress.

**453.13.2** **Recessed.** Doors when fully opened shall not extend into the required exit width of corridors, except for door thickness and required hardware. Doors may either be recessed and hinged to swing 90 degrees, or if flush with corridor wall shall contain a view panel and be hinged to swing 180 degrees.

**453.13.3 Special function doors.** Special function doors, including balanced doors and overhead doors, shall not be used in a means of egress.

**453.13.4 Overhead and sliding security grilles.** Security grilles shall have an adjacent side-hinged door swinging in the direction of exit and readily opened from the inside.

**453.13.5 Gates.** Gates used to secure buildings or used for egress shall be side-hinged and readily opened from the side from which egress is to be made without the use of a key or special tool, or shall have an adjacent side hinged door, or doors as required for occupant load, swinging in the direction of exit and readily opened from the inside without a key.

**453.13.6 Hardware**. Doors and gates shall be equipped with hardware which will allow egress at all times without assistance. No padlock, chain, hasp, lock, deadbolt, or other device shall be installed at any time on any door used for exiting. Doors which by code require closers and other doors subject to wind exposure shall be equipped with closers to prevent slamming and uncontrolled opening. All doors opening into smoke-tight exit access corridors shall be self-closing or automatic closing. Smoke doors in walls used to divide corridors into separate atmospheres shall be provided with push-pull plates and are not required to have positive latching. As an exception to Section 1008.1.9.7, delayed egress locks may be used in media centers, alternative education centers, and exceptional student education centers. Delayed egress locks are prohibited at time-out rooms at all locations.

**453.13.7 Safety glazing: Panels and storefronts.** In addition to the requirements of Section 2406.4, the following is considered a hazardous location and requires safety glazing: Glazed panels within 48 inches (1219 mm) of a door, excluding transoms or vertical panels above 6 feet 8 inches (2031 mm).

**453.13.7.1** All glazing in hazardous locations shall be safety glazing meeting the requirements of the *Florida Building Code, Building*, Section 2406.

**453.13.7.2** Large glass panels shall be subdivided by a built-in horizontal member or a permanent chair rail not less than 11/2 inches (38 mm) in width, located between 24 and 36 inches (610 and 914 mm) above the floor.

**453.13.8 Windows.**

**453.13.8.1 Natural light and ventilation.** Natural light and ventilation requirements for new construction shall be satisfied by windows with operable glazing, providing a net free open area equivalent to 5 percent of the floor area, in all classrooms on the perimeter of buildings, where required by Chapter 1013, Florida Statutes. Auxiliary spaces, music rooms, gyms, locker and shower facilities, laboratories requiring special climate control, and large group instructional spaces having a capacity of more than 100 persons need not have operable windows for the purpose of providing natural light and ventilation. Emergency access, emergency rescue, and secondary means of egress windows maybe included in the calculation to comply with this requirement.

***Change Section 453.13.8.2 to read as shown:***

**453.13.8.2 Projecting and awning windows**. Projecting and awning windows shall not be located below door head height if in, or adjacent to, a play area, a corridor or walkway.

**453.13.8.3 Security/storm screens or grills**. If a security/storm screen or grille is installed on the outside of an emergency access, rescue or egress window assembly then that security/storm screen or grille together with the emergency rescue window assembly shall be operable from the inside by a single operation without the use of tools to allow for exit under emergency conditions. The emergency rescue window shall be identified by signage, and the release device shall be readily identifiable.

**453.14 Special safety requirements.**

**453.14.1 Master control switch.** In addition to the regular main supply cut-off, each laboratory type space (such as biology, industrial, chemistry, physics, home economics, and electronics labs) equipped with unprotected gas cocks, compressed air valves, water or electric services which are easily accessible to students, shall have master control valves or switches with permanently attached handles, located and accessible within 15 feet (4572 mm) of the instructor's station or adjacent to the door within that space to allow for emergency cut-off of services. The cut-offs shall be in a nonlockable place and the location and operation shall be clearly labeled. Valves shall completely shut off with a one-quarter turn. Computer labs are exempted from this requirement. (Also, see "Emergency shut off switches," and "Emergency disconnects" requirements under "Electrical.")

**453.14.2 Interior signage**. Signage is required in educational and ancillary facilities. Design, construction, installation, and location of interior signage and graphics shall comply with the *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal and the following:

**453.14.2.1** **Emergency rescue windows.** Windows for emergency rescue shall comply with NFPA 101, Florida Edition, as adopted by the *Florida Fire Prevention Code*, shall be operable from the inside by a single operation, and shall be labeled "EMERGENCY RESCUE-KEEP AREA CLEAR." Hinged emergency rescue windows shall swing in the direction of egress.

**453.14.2.2** Maximum capacity signs in each space with a capacity of 50 or more occupants. The signs shall be mounted adjacent to the main entrance door.

**453.14.2.3** Room name, room number and, if different, FISH inventory numbers shall be provided for each space.

**453.14.2.4** A graphic diagram of primary and emergency evacuation routes shall be posted adjacent to the primary exit door from each space occupied by six or more students. The diagram shall clearly indicate, by contrasting color and number, each route of evacuation.

**453.14.2.5** Signs necessary to meet accessibility requirements shall be provided.

**453.14.2.6** Hazardous work and storage areas shall be identified by appropriate caution signs.

**453.14.3 Other potential hazards.** Pipes, ductwork, fans, light fixtures, window projections, protruding sharp corners, or other potential hazards shall not be installed below 6 feet 8 inches (2031 mm) AFF. Audio/visual aids in classrooms may be mounted below 6 feet 8 inches (2031 mm) provided they are marked and padded in accordance with accepted safety standards or have permanent cabinets installed below them.

**453.14.4 Storage shelving.** Shelving shall not have sharp corners, splinters, or any construction feature that would be hazardous to the occupants. Shelving shall be constructed to carry the loads imposed. Shelving in science, labs, and shop storage rooms, and other places which may contain hazardous materials shall have a 1/2 inch (12.7 mm) lip on the front edge of each shelf and shall be constructed of noncorrosive material.

**453.14.5** **Vertical platform lifts and inclined wheelchair lifts.** The following standards are in addition to the other requirements of the *Florida Building Code*, Florida law, and federal requirements:

**453.14.5.1** Lifts shall not reduce the width of required means of egress.

**453.14.5.2** Lifts shall have shielding devices to protect users from the machinery or other hazards and obstructions.

**453.14.5.3** Lifts shall be key operated for attendant operation in all facilities housing kindergarten to grade 8.

**453.14.5.4** Inclined wheelchair lifts may be installed in facilities provided:

**453.14.5.4.1** The platform is equipped with bidirectional ramp sensing to stop travel if obstructions are encountered.

**453.14.5.4.2** Guide rails are smooth and continuous with no sharp edges or obstructions, all drive system components contain safety features for protection of users, and cables and pulling devices are shielded.

**453.14.6 Color code machinery.** Working machinery with component parts shall be color-coded per ANSI Z53.1, American National Standard Safety Color Code for marking Physical Hazards. Safety zone lines shall be marked on the floor areas surrounding working machinery.

**453.14.7 Anchor equipment**. All equipment designed to be permanently mounted shall be securely anchored to its supporting surface.

**453.14.8 Interior finishes.**

**453.14.8.1 Floors**. Floors in instructional spaces shall be covered with resilient material or carpet. Floors in gymnasium locker rooms, showers, drying areas, toilet rooms, kitchens, sculleries, food storage areas and can wash areas shall be impervious.

**453.14.8.2 Walls**. Walls in kitchens, sculleries, can wash areas, shower rooms shall be impervious to a height of at least 6 feet (1829 mm) above the floor. Toilet and shower partitions shall be impervious.

**453.14.8.3 Ceilings.** Ceilings in group toilet rooms, kitchens, sculleries, can wash areas, showers and locker rooms shall be impervious.

**453.15 Mechanical.**

**453.15.1 Gas and fluid piping**.

**453.15.1.1 Flammable liquids/gases.** Piping systems for flammable liquids or gases shall not be installed in interior corridors or stairwells.

**Exception:** Piping may be located within corridors provided that they are enclosed in a minimum 1-hour fire-rated enclosure.

**453.15.1.2 Piping systems.** Piping (fluid system) shall not be run where students can access the pipes, or in areas such as on roofs where they can be damaged by routine or periodic maintenance activities.

**453.15.1.3 Main supply valve.** The main supply cut-offs for flammable liquids or gases shall shut down upon activation of the fire alarm system. Refer to the automatic shutoff requirements of Section 453.7.6.

**453.15.2 Air plenums.** Corridors shall not be used as a supply, return, exhaust, relief, or ventilation air plenum. The space between the corridor ceiling and the floor or roof structure above, if used as a plenum, shall be constructed with the ceiling, floor and walls as a minimum 1-hour fire-rated assembly or as a 1-hour fire-rated horizontal wall supported by the corridor walls.

**Exception:** A smoke-tight corridor with a solid ceiling may be used in a fully sprinklered building.

**453.15.3 Residential equipment.** In home economics instructional spaces, faculty lounges, and similar areas where small residential-type ranges are installed for staff use or student education, residential-type hoods mechanically exhausted to the outside shall be used. Hood fire suppression systems are not required to be installed.

***Change Section 453.15.4 to read as shown:***

**453.15.4 Toilet room ventilation.** Toilet rooms shall be continuously ventilated during building occupancy.

**Exception**: Individual toilet rooms shall be ventilated continuously during building occupancy or ventilation shall turn on ~~off~~ with the light switch and run for at least 10 minutes after the light has been turned off.

**453.15.5 Ventilation air make-up for HVAC systems**. Where peak occupancies of less than 3 hours duration occur, the outdoor air flow may be determined on the basis of average occupancy for school buildings for the duration of operation of the air-conditioning system, provided the average occupancy used is not less than one-half the maximum.

***Change Section 453.16 to read as shown:***

**453.16 Plumbing.**

**453.16.1 Standards.** Educational and ancillary facilities shall be provided with toilets, hand washing facilities, and drinking fountains for all occupants, in ratios and accessible as required by the Florida Building Code, Florida law, and federal requirements.

**Exception:** Unisex toilets shall not be provided in addition to group toilets in assembly occupancies.

**453.16.1.1 Assembly occupancies.** Toilet facilities for assembly occupancies (i.e. media centers, gymnasiums, cafetoriums, and auditoriums) are not required to be in addition to the overall required plumbing fixture count.

**453.16.1.2 Location.** Student toilets shall be distributed throughout the facility and located on each floor for convenient access and continuous supervision. The path of travel to the nearest toilet facility shall not exceed a distance of 200 feet.

**~~453.16.2 Teacher toilets.~~** ~~In school board facilities, faculty and staff toilets shall be separate from student toilets.~~

**~~Exception:~~** ~~Separation of faculty/staff and student toilet facilities is not required for Florida colleges.~~

**453.16.2~~3~~ Public shelter.** Refer to the public shelter design criteria of Section 453.25.

**453.16.3~~4~~ Urinals.** Trough urinals shall not be installed in any location.

**453.16.4~~5~~ Stall urinals.** **~~Floor drains and hose bibbs.~~** ~~All group toilet rooms shall be provided with at least one floor drain and one easily accessible hose bibb. The floor shall be sloped down to the drain.~~ Stall urinals shall not serve as the required floor drains.

**453.16.5~~6~~ Exterior entries.** Exterior entries to toilet rooms shall have outward swinging doors.

**453.16.6~~7~~ Hot water.** When hot water is supplied to showers, handwash sinks, lavatories in toilet rooms, a mixing valve shall be installed to control the temperature which shall not exceed 110°F (43°C).

**453.16.7~~8~~ Delayed closing valves.** Water supply at toilet room lavatories shall be controlled by delayed-closing valves.

**453.16.8~~9~~ Shower facilities.** Showers shall be provided only where required by the district’s educational program and, where provided, shall utilize energy saving concepts for hot water as required by Section 1013.44(2), Florida Statutes. When provided, shower areas shall comply with the following:

**453.16.8~~9~~.1** Floor finish shall be slip resistant.

**453.16.8~~9~~.2** A master control valve shall be provided to control the shower heads. Showers shall be equipped with flow control devices to limit total flow to a maximum of 3 gpm (0.19 ~~-19~~ L/s) per shower head.

**453.16.9~~10~~ Kitchens.** Kitchens and food service areas shall be provided with toilet and hand washing facilities for employees as required by code, state rule and statute.

**453.16.9~~10~~.1** Toilet rooms shall be completely enclosed, have self-closing doors, and shall open into vestibules with self-closing doors. Toilet rooms shall not open directly into food preparation areas, serving areas, or dining areas. A minimum of one water closet and one lavatory, with hot and cold water, shall be provided in each staff toilet.

**453.16.9~~10~~.2 Floor drains.** Floor drains shall be provided in the food serving area, kitchen area, scullery, garbage and rubbish rooms, and can wash area.

**453.16.10~~11~~ Dousing shower and eye wash.** Every science room, lab, or shop where instructors and students handle materials or chemicals potentially dangerous to human tissue shall be provided with a dousing shower and eye wash for emergency use, including a floor drain.

**453.16.11~~12~~ Floor drains and plumbing fixtures in equipment rooms.** No floor drain or other plumbing fixture shall be installed in a room containing air handling machinery when such room is used as a plenum. When rooms are used as a plenum, equipment drains shall be conveyed through an indirect waste receptor located outside such rooms or other approved point of disposal.

**453.17 Electrical.**

**453.17.1 Emergency lighting.** Emergency lighting shall be provided at internal and external means of egress, in student-occupied areas, in group toilets, and main electrical rooms.

**453.17.2 Electrical rooms and closets.** Main service panels and switches, electrical distribution panels, cabinets, and rooms shall be lockable and not readily accessible to teachers or students.

**453.17.3 Spare capacity.** Lighting and power panels shall be provided with a minimum of 20-percent spare breakers and a minimum of 10-percent spare capacity in all main panels and switchboards.

**453.17.4 Emergency shutoff switches.** Every laboratory space which has electrical receptacles at student workstations shall have an emergency shutoff switch within 15 feet (4572 mm) of the instructor's workstation. The emergency shut off switch shall be operable by a single motion and shall interrupt power to all receptacles in the room.

**Exception:** Emergency shutoff switches are not required in computer laboratories.

**453.17.5 Emergency disconnect**. Each space equipped with electrically powered machinery accessible to students shall have a minimum of two master emergency disconnect switches at convenient locations within the space to shutoff all power tool outlets, power to student accessible machines and receptacles in the shop. One emergency shutoff or disconnect switch shall be located near the machinery and one emergency shutoff or disconnect switch shall be located in the instructor's office if there is a clear view of the entire shop area, others may be required and located as determined by the authority having jurisdiction. The emergency disconnect or shutoff switch shall be operable by a single motion.

**Exception:** Ordinary office machines, computers, sewing machines, potter's wheels, residential cooking equipment in home economics labs and other nonhazardous machines do not require emergency disconnect devices.

**453.17.6 Sauna and steam rooms.** A "panic" switch to deactivate power to heating equipment shall be provided inside sauna and steam rooms. The panic switch shall also be tied into an alarm or other approved warning device in a supervised space in the area of the sauna and/or steam room. The operation of the switch shall be labeled to indicate the intended function.

**453.17.7 Lightning.** All facilities in high lightning risk areas shall be evaluated using the Risk Assessment Guide in NFPA 780 and other standards which address lightning protection, and shall be protected accordingly.

**453.17.8 Ground fault interrupter (GFI) receptacles.** GFI receptacles shall be installed as required by NFPA 70 of Chapter 27 and in the following locations:

1. All elementary special needs classroom receptacles.

2. All building entry vestibule receptacles.

3. All mechanical, boiler and electrical room receptacles.

**453.18 Assembly occupancies in public educational facilities.**

**453.18.1** Occupant capacity for egress shall be in accordance with Table 1004.1.1 except as follows:

***Change Section 453.18.1.1 to read as shown:***

**453.18.1.1** **Dressing Rooms.** Dressing rooms at 20 net square feet (1.86 ~~2~~ m2) per person.

**453.18.1.2 Gymnasium.** The number of fixed and telescopic bench-type bleacher seats plus the main court area at 15 gross square feet (1.4 m2) per person, plus locker rooms at 5 net square feet (.5 m2) per person.

**453.18.1.3 Classrooms and labs**. If spaces are combined through the use of folding partitions, the capacity and exiting shall be based on the capacity of all the spaces joined.

**453.18.1.4 Small Group Areas in Media Centers.** Small group room or area (view and preview) in Media Centers at 5 net square feet (.5 m2) per person.

**453.18.1.5 Closed circuit television production, distribution, and control.** The main floor area at 15 net square feet (1.4 m2) per person.

**453.18.1.6 Interior courtyards.** The interior courtyard area at 15 gross square feet (1.4 m2) per person. Raised, dedicated landscape areas may be deducted.

**453.19 Shade and green houses.**

**453.19.1 General.** Shade/green houses shall be of Type I or II construction (metal frame) capable of withstanding the appropriate wind load.

**453.19.2 Unrestricted exiting.** The location of the shade/green house shall not hinder exiting from new and/or existing structures.

**453.19.3 Required doors.** A minimum of two doors remotely located shall be provided. Doors shall be side hinged and shall swing in the direction of egress.

**453.19.4 Accessibility.** Green houses shall meet accessibility requirements. The accessible walkway shall be connected to doors leading to an accessible route to the permanent structure.

**453.19.5 Shade cloth**. Shade cloth shall be tear-away fabric securely fastened to the structural frame.

**453.19.6 Fire extinguisher.** A minimum of one Type 2A-10B:C fire extinguisher shall be provided per shade/green house.

**453.19.7 Fire alarm.** Fire alarm pull stations shall be located within 200 feet (60 960 mm) of any shade or green house. Fire alarm horns mounted on a permanent building must be audible inside the shade/green house.

**453.19.8 Space heaters.** Space heaters, when provided, shall be mounted at least 6 feet 8 inches (2031 mm) AFF.

**453.20 Storage.**

**453.20.1 General storage.** Storage rooms and closets shall not be located over or under exit stairs and ramps whether interior or exterior. General storage space(s) shall be included in every educational facility for the bulk storage of materials, supplies, equipment, and books. Storage rooms shall be separated from mechanical and electrical spaces. Storage spaces shall be mechanically ventilated and conditioned as appropriate for the type of materials to be stored. Sinks located in general storage rooms shall not be used for custodial services.

**453.20.2 Custodial work areas and storage.** Provide custodial work areas with well supported shelving for supplies, cleaning, and sanitation materials and an office area including male/female lockers and toilet facilities.

***Change Section 453.20.3 to read as shown:***

**453.20.3 Custodial closets and storage**. Custodial closets shall be provided with storage shelving and a service sink supplied with both hot and cold water. They shall be located to serve each instructional floor and wing regardless of floor area, and other areas such as stage, kitchen, gym, auditorium, clinic, offices and shops. The travel distance to the nearest custodial closet shall not exceed 150 feet (45.72 m).

**453.20.4 Chemical and hazardous materials storage**. In addition to the requirements of the *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal for separation and protection, chemical and hazardous storage facilities shall also include:

**453.20.4.1 Chemical storage.** Doors shall be lockable from the outside and operable at all times from the inside. Rooms shall be well illuminated. Cabinets shall have shelves with a ½ inch (12.7 mm) lip on the front and shall be constructed of noncorrosive material.

**453.20.4.2 Hazardous materials storage.** Buildings and/or rooms used for the storage, handling and disposal of flammable, poisonous, or hazardous materials or liquids, and equipment powered by internal combustion engines and their fuels shall be separated from adjacent spaces by 1-hour fire-rated assemblies. These requirements also apply to completely detached buildings within 60 feet (18 288 mm) of student-occupied facilities. Doors shall have a C Label and open directly to the exterior. Storage buildings and/or rooms shall be mechanically ventilated. Electrical fixtures, switches, heat detectors and outlets installed in flammable storage rooms shall be explosion proof.

***Add Section 453.20.5 to read as shown:***

**453.20.5 Custodial receiving.** Custodial receiving where chemicals that are dangerous to human tissue are stored, handled, or mixed shall be equipped with a dousing shower and eye wash, including a floor drain.

**453.21 Child care/day care/prekindergarten facilities.**

**453.21.1** Child care/day care/prekindergarten facilities located on board-owned property shall comply with *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal and the specific criteria in this section. Child care/day care/pre-kindergarten facilities requiring a license from another agency may also be required to comply with additional construction requirements imposed by that agency.

**453.21.2** Toilet facilities shall meet accessibility requirements and should open into the instructional space. The toilet may be used by both sexes and shall contain a water closet, lavatory and related accessories.

**453.21.3** If child care facilities are provided with a bathing area, it shall be within or adjacent to the child care area and shall contain either a shower with hand-held sprayer or a tub. The water temperature shall be controlled by a mixing valve and shall not exceed 110°F (43°C).

**453.21.4** Toilet facilities shall have a non-slip impervious floor and 6-foot (1829 mm) impervious wainscot.

**453.21.5** Drinking fountain(s) shall be provided for the children and be within close proximity of the child care facility.

**453.21.6** A towel and soap dispenser shall be provided at each sink. Hand wash areas for adults shall be provided with warm water; the water temperature shall be controlled by a mixing valve and shall not exceed 110°F (43°C). All electrical receptacles shall be placed out of reach of the children.

**453.21.7** When provided, a residential-type kitchen shall include a nonslip floor, a refrigerator, a residential range, a residential-type range hood mechanically exhausted to the outside, and a fire extinguisher located within 15 feet (457 mm) of the range within the same room.

**453.21.8** Areas designated for children's sleeping mats, cots or cribs shall include a clearly marked exit passageway.

**453.21.9** The child care facility shall not contain any storage of cleaning agents, chemicals, or other hazardous materials in student accessible areas.

**453.21.10** Outdoor play areas shall be provided and shall be protected from access to streets or other dangers. The play area shall be fenced or walled to a minimum height of 4 feet (1219 mm) and any latches on maintenance gates shall be secured or beyond the reach of the children.

**453.21.11** Shade shall be provided in the play area (a covered play area may be provided).

**453.21.12** Play equipment shall be firmly anchored, free of sharp corners or pointed surfaces, and shall have cushioning surfaces such as mats or sand beneath.

**453.21.13** The grounds shall be free of undergrowth or harmful plant material.

**453.22 Clinics.**

**453.22.1** Clinics in kindergarten through grade 12 (K-12), vocational-technical centers (VTC), and full service schools shall comply with the general criteria found in the *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal, as well as the specific criteria found herein. Clinics shall be located and equipped to provide emergency aid to students. Closets and storage cabinets used for medications and bandages shall have locks, and shall be designed to be under constant supervision.

**453.22.2** School clinics shall include locked storage, toilet room and shower, and bed space.

**453.22.3** Sanitary facilities are required as follows:

**453.22.3.1** Elementary school clinics, including kindergarten, shall include at a minimum one accessible toilet room, to serve male and female students, complete with a water closet, lavatory, accessible shower, changing table, and accessories.

**453.22.3.2** Secondary and VTC school clinics shall include two accessible toilet rooms complete with water closet, lavatory, accessories and shower.

**453.22.3.3** Toilet rooms in clinics shall include both hot and cold water at the showers and all lavatories. The water temperature shall be controlled by a mixing valve and shall not exceed 110°F (43°C).

**453.22.3.4** Toilet rooms shall have exhaust fans vented to the exterior.

**453.22.3.5** A working counter top with lavatory/sink and hot water shall be provided in each clinic.

***Change Section 453.22.4 to read as shown:***

**453.22.4** The bed area shall be designed to maintain constant visual supervision from the office. Space for student beds shall be provided in each clinic at 50 square feet (4.6 ~~5~~ m2) per bed. Space for beds in secondary and VTC schools shall be equally divided for male and female students. Beds shall be provided based on student capacity in the following ratios:

**453.22.4.1** Up to 500 students–three beds.

**453.22.4.2** 501 to 1,000 students–four beds.

**453.22.4.3** 1,001 to 2,000 students–five beds.

**453.22.4.4** Over 2,000–six beds.

**453.22.5** **Full-service school health clinics**.

**453.22.5.1 Location**. Clinics shall be located to provide a direct accessible route from the exterior and from the interior or by a connecting covered walk.

**453.22.5.2 Parking.** Clinics shall be provided with 10 designated parking spaces immediately adjacent to the clinic, one of which shall be accessible to persons with disabilities.

**453.22.5.3 Sanitary facilities**. Sanitary facilities are required as follows:

**453.22.5.3.1** Full-service school clinics shall include one accessible toilet room for males and one for females, complete with water closet, lavatory, accessories, and shower. Additional toilets may be required for a full-service school clinic depending on occupant load and program.

**453.22.5.3.2** Hot and cold water shall be provided at the showers and lavatories. The water temperature shall be controlled by a mixing valve and shall not exceed 110°F (43°C).

**453.22.5.3.3** Toilet rooms shall have exhaust fans vented to the exterior.

**453.22.5.3.4** A nurses' station shall be provided with a working counter with lavatory/sink and be located so as to maintain visual supervision of the bed area.

**453.22.5.4** Locked storage rooms shall be provided for a refrigerator, files, equipment, and supplies.

**453.22.5.5** Data outlets shall be provided for computer hook-ups and computer networking and additional electric outlets shall be provided for hearing and vision testing machines.

**453.23 Kilns.** Kilns shall not be located near or adjacent to paths of egress or exit and shall be placed in separate rooms when serving students through grade 3. Kiln rooms shall be provided with appropriate smoke/heat detectors connected to the fire alarm system.

**453.24 Open plan schools.** An open plan building or portion of a building may be subdivided into smaller areas by use of low partitions [maximum 5 feet high (1524 mm)], movable partitions, or movable furnishing, which by location and type do not hinder or obstruct the ability of persons in one area of the plan to be immediately aware of an emergency condition in any other area of the plan. Corridors shall be identified with different color or type of flooring materials, by permanent low partitions or by other means to prevent blockage of the path of egress to exits by partitions or furniture. When open plan schools are partitioned, the work shall conform to the code requirements for new construction. Demountable or movable partitions in open plan classroom areas shall be a maximum of 5 feet (1524 mm) in height and shall terminate a minimum of 5 feet (1524 mm) from any permanent wall. All circulation openings in open plan areas shall be a minimum of 5 feet (1524 mm) wide. Movable furnishings shall not exceed 5 feet (1524 mm) in height and shall have a stable base.

**453.25 Public shelter design criteria.**

***Change Section 453.25.1 to read as shown:***

**453.25.1** **New facilities.** New educational facilities for school boards and Florida college boards, unless specifically exempted by the board with the written concurrence of the applicable local emergency management agency or the Florida Division of Emergency Management (DEM) ~~Department of Community Affairs (DCA)~~, shall have appropriate areas designed as enhanced hurricane protection areas (EHPAs) in compliance with this section.

**Exception:** Facilities located, or proposed to be located, in a Category A, B or C ~~1, 2, or 3~~ evacuation zone shall not be subject to these requirements.

**453.25.1.1** Enhanced hurricane protection areas (EHPA). The EHPA areas shall provide emergency shelter and protection for people for a period of up to 8 hours during a hurricane.

**453.25.1.1.1** The EHPA criteria apply only to the specific portions of (K-12) and Florida college educational facilities that are designated as EHPAs.

**453.25.1.2** The EHPAs and related spaces shall serve the primary educational or auxiliary use during non-shelter occupancy.

**453.25.2 Site.** Factors such as low evacuation demand, size, location, accessibility and storm surge may be considered by the board, with written concurrence of the local emergency management agency or the DEM ~~DCA~~, in exempting a particular facility.

**453.25.2.1 Emergency access.** EHPAs shall have at least one route for emergency vehicle access. The emergency route shall be above the 100-year floodplain. This requirement may be waived by the board, with concurrence of the local emergency management agency or the DEM ~~DCA~~.

**453.25.2.2 Landscaping.** Landscaping around the EHPAs shall be designed to preserve safety and emergency access. Trees shall not conflict with the functioning of overhead or underground utility lines, or cause laydown or impact hazard to the building envelope.

**453.25.2.3 Parking.** During an emergency condition, vehicle parking shall be prohibited within 50 feet (15,240 mm) of an EHPA. Designated EHPA parking areas may be unpaved.

**453.25.2.4 Signage.** Floor plans of the facility, indicating EHPAs, shall be mounted in the emergency manager's office/area.

**453.25.3 Design.** EHPAs may be above or below ground and may have more than one story, provided the design satisfies the wind load and missile impact criteria. Modular and open-plan buildings may serve as EHPAs provided the design satisfies the wind load and missile impact criteria.

**453.25.3.1 Excluded spaces.** Spaces such as mechanical and electrical rooms, storage rooms, open corridors, kitchens, science rooms and labs, vocational shop areas and labs, computer rooms, attic and crawl spaces shall not be used as EHPAs.

***Change Section 453.25.3.2 to read as shown:***

**453.25.3.2 Capacity.** Fifty percent of the net square feet of a designated educational facility shall be constructed as EHPAs. The net square feet shall be determined by subtracting from the gross square feet those spaces, such as mechanical and electrical rooms, storage rooms, open corridors, kitchens, science rooms and labs, vocational shop areas and labs, computer rooms, attic and crawl spaces that shall not be used as EHPAs. The board, with concurrence of the applicable local emergency management agency or ~~DCA~~ DEM, may adjust this requirement if it is determined to be in its best interest. The capacity of an EHPA shall be calculated at 20 square feet (1.86 ~~2~~ m2) per occupant (adults and children five years or older).

***Change Section 453.25.3.2 to read as shown:***

**453.25.3.2 Capacity.** Fifty percent of the net square feet of a designated educational facility shall be constructed as EHPAs. The net square feet shall be determined by subtracting from the gross square feet those spaces, such as mechanical and electrical rooms, storage rooms, open corridors, kitchens, science rooms and labs, vocational shop areas and labs, computer rooms, attic and crawl spaces that shall not be used as EHPAs. The board, with concurrence of the applicable local emergency management agency or ~~DCA~~ DEM, may adjust this requirement if it is determined to be in its best interest. The capacity of an EHPA shall be calculated at 20 square feet (1.86 ~~2~~ m2) per occupant (adults and children five years or older).

**453.25.3.3 Toilets**. Toilet and hand washing facilities should be located within the EHPAs and provided at one toilet and one sink per 40 occupants. These required toilet and hand-washing facilities are not in addition to those required for normal school occupancy and shall be included in the overall facility fixture count.

**453.25.3.3.1** Support systems for the toilets, e.g., bladders, portable toilets, water storage tanks, etc., shall be capable of supplying water and containing waste, for the designed capacity of the EHPAs.

**453.25.3.3.2** Plumbing and valve systems of "normal" toilets within the EHPAs may be designed for conversion to emergency operation to meet the required demand.

**453.25.3.4 Food service.** Where feasible, include counter tops for food distribution functions in the EHPAs.

**453.25.3.5 Manager's office.** An administration office normally used by a school administrator shall be identified as the EHPA manager's office and shall be located within the EHPA. The office shall have provisions for standby power, lighting, communications, main fire alarm control panel and storage for the manager's equipment.

**453.25.4 Structural standard for wind loads.** At a minimum, EHPAs shall be designed for wind loads in accordance with ASCE 7, Minimum Design Loads for Buildings and Other Structures, Risk Category IV (Essential Buildings) . Openings shall withstand the impact of wind-borne debris missiles in accordance with the impact and cyclic loading criteria per ASTM E-1886, and~~,~~ ASTM E-1996 or SBC/SSTD 12. Based on a research document, *Emergency Shelter Design Criteria for Educational Facilities*, by the University of Florida for the DOE, it is highly recommended by the department that the shelter be designed using the map wind speed plus 40 mph.

**453.25.4.1 Missile impact criteria.** The building enclosure, including walls, roofs, glazed openings, louvers and doors, shall not be perforated or penetrated by a flying object. For walls and roofs, the missile criteria are ~~is~~ as provided in ASTM E-1886 and ASTM E-1996 or SBC/SSTD 12.

**453.25.4.1.1** Materials used for walls, roofs, windows, louvers, and doors shall be certified for resistance to missile impact criteria.

**453.25.4.1.2** The glazed openings or permanent protective systems over glazed openings shall be designed for cyclic loading.

**453.25.4.2 Roofs.** Roof decks shall be cast-in-place 4-inch (102 mm) or more, normal weight concrete. Concrete decks shall be waterproof. Systems other than cast-in-place concrete shall have adequate bearing, anchorage against wind uplift, diaphragm action, and resistance to rain that are equivalent to a cast-in-place system.

**Exception**: Structural precast concrete roofs, composite metal decks with normal weight concrete roofs, or other systems and materials that meet the wind load and missile impact criteria may be used.

**453.25.4.2.1** Light weight concrete or insulating concrete may be used on roof decks of EHPAs provided the roof decks are at least 4-inch (102 mm) cast-in-place normal weight concrete or other structural systems of equivalent strength.

**453.25.4.2.2** Roof openings (e.g., HVAC fans, ducts, skylights) shall be designed to meet the wind load and missile impact criteria.

**453.25.4.2.3** Roof coverings shall be specified and designed according to the latest ASTM and Factory Mutual Standards for materials and wind uplift forces. Roofs shall be inspected by a licensed engineer/architect and a representative of the roofing manufacturer.

**453.25.4.2.4** Roofs shall have adequate slope and drains sized for normal use and shall have emergency overflow scuppers.

**4253.25.4.2.5** Parapets shall satisfy the wind load and missile impact criteria; roof overhangs shall resist uplift forces.

**453.25.4.3 Windows.** All unprotected window assemblies and their anchoring systems shall be designed and installed to meet the wind load and missile impact criteria.

**453.25.4.3.1** Windows may be provided with permanent protective systems, provided the protective system is designed and installed to meet the wind load and missile impact criteria and completely covers the window assembly and anchoring system.

***Change Section 453.25.4.3.2 to read as shown:***

**453.25.4.3.2** EHPAs shall have mechanical ventilation systems. Ventilation shall be provided at a minimum rate of 2 cfm per square foot (0.6 m3/min. per square meter) of EHPA floor area. The mechanical ventilation system shall be connected to the EHPA's emergency power.

**453.25.4.4 Doors**. All exterior and interior doors subject to possible wind exposure and/or missile impact shall have doors, frames, anchoring devices, and vision panels designed and installed to resist the wind load and missile impact criteria or such doors, frames, anchoring devices, and vision panels shall be covered with permanent protective systems designed and installed to resist the wind load and missile impact criteria.

**453.25.4.5 Exterior envelope**. The exterior envelope, louvers over air intakes and vents, and gooseneck type intakes and vents of EHPAs shall be designed and installed to meet the wind load and missile impact criteria.

**453.25.4.5.1** HVAC equipment mounted on roofs and anchoring systems shall be designed and installed to meet the wind load criteria.

**453.25.4.5.2** Roof mounted HVAC equipment shall have a 12-inch-high (305 mm) curb around the roof opening and be designed to prevent the entry of rain water.

**453.25.4.6 Foundations and floor slabs.** Foundations shall be designed to resist all appropriate loads and load combinations, including overturning moments due to wind. The floor elevation and necessary life safety and other emergency support systems of EHPAs shall be elevated above the maximum storm surge inundation elevation associated with a Category 4 hurricane event. Storm surge elevations shall be identified by the most current edition of the regional Sea Lake and Overland Surges from Hurricanes (SLOSH) studies and atlases.

**453.25.5 Electrical and standby emergency power system.** The EHPA shall be provided with a standby emergency electrical power system, per Chapter 27, NFPA 70 Articles 700 and 701, which shall have the capability of being connected to a backup generator or other optional power source. Where economically feasible, an equivalent photovoltaic system may be provided. The EHPA's emergency systems includes, but are not limited to: (1) an emergency lighting system, (2) illuminated exit signs, (3) fire protection system(s), alarm (campus wide) and sprinkler, and (4) minimum ventilation for health/safety purposes. The fire alarm panel shall be located in the EHPA manager's office. A remote annunciator panel shall be located in or adjacent to the school administrator's office. When generators are installed, the facility housing the generator, permanent or portable, shall be an enclosed area designed to protect the generators from wind and missile impact. Air intakes and exhausts shall be designed and installed to meet the wind load and missile impact criteria. Generators hardened by the manufacturer to withstand the area's design wind and missile impact criteria shall be exempt from the enclosed area criteria requirement.

**453.25.5.1 EHPA lighting**. Emergency lighting shall be provided within the EHPA area, EHPA manager's office, toilet rooms, main electrical room and generator spaces and shall be at least 10 footcandles (100 lux) of general illumination, which can be reduced to ½ footcandle (5 lux) in the sleeping areas during the night.

**453.25.5.2 Optional standby circuits.** Additional nonlife safety systems, as defined by Chapter 27, NFPA 70 Article 702 (optional standby circuits), may be supplied power, if available, by the Standby Emergency Power System. These systems shall be connected to the Standby Emergency Power System via an electrical subpanel to the Standby Electrical Power System's main electrical panel. This will allow selective or total load shedding of power if required. The fire alarm, emergency lighting and illuminated exit signs throughout the entire campus shall receive first priority to power provided by the Standby Emergency Power System per Chapter 27, NFPA 70 Article 700. The systems listed are not all encompassing but are in order of priority. Local officials may request additional non-life safety systems they deem necessary for health, welfare and safety of the public during occupancy:

1. Remainder of the school's campus security lighting (building and site).

2. Additional ventilation systems within the EHPA, including heat.

3. Intercom system.

4. Food storage equipment.

5. Additional electric receptacles, other than those required by Section 453.25.5.3.

**453.25.5.3 Receptacle outlets.** A minimum of four electrical outlets, served with power from the standby circuits, shall be provided in the EHPA manager's office.

***Change Section 453.25.6 to read as shown:***

**453.25.6 Inspections.** EHPAs shall be considered "threshold buildings" in accordance with Section 553.71(11 ~~7~~), *Florida Statutes*, and shall comply with Sections 553.79(5), 553.79(7), and 553.79(8), *Florida Statutes*.

**453.25.6.1** Construction of EHPAs shall be inspected during the construction process by certified building code inspectors or the design architect/engineer(s) certified pursuant to Part XII Chapter 468, *Florida Statutes* and threshold inspectors for compliance with applicable rules and laws.

**453.25.6.2** The emergency electrical systems shall be inspected during the construction process by certified electrical inspector or Florida-registered professional engineers certified pursuant to Part XII Chapter 468, *Florida Statutes*, skilled in electrical design.

**453.25.6.3** EHPAs shall be inspected and recertified for compliance with the structural requirements of this section every five years by a Florida-registered professional engineer skilled in structural design. If any structural system, as specified in this section, is damaged or replaced, the recertification shall be obtained prior to the beginning of the next hurricane season.

**453.25.6.4** All shutter systems, roofs, overflow scuppers, and structural systems of EHPAs shall be inspected and maintained annually prior to hurricane season and after a major event. All emergency generators shall be inspected under load conditions including activation of the fire alarms, emergency lights as per applicable equipment codes and NFPA standards, and including mechanical systems and receptacles connected to the emergency power.

**453.26 Time-out rooms.**

**453.26.1** Locking an individual inside a space without a means of opening the door from within that space is contrary to the exiting philosophy of the *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal for educational facilities. The educational program which requires containment of the out-of-control student can be accommodated within this context only if the following are met:

**453.26.2 Electromagnetic locking device.** When a time-out room is to be locked, an electromagnetic locking device may be used and shall have the following features:

**453.26.2.1** The lock shall remain engaged only when a push button mounted outside the time-out room adjacent to the door frame is continuously depressed by hand. Upon release of pressure, the door shall unlock. The locking device shall be designed so that it cannot be engaged by leverage of an inanimate object or in any other manner except by constant human contact.

**453.26.2.2** The push button, or similar device, shall be recessed from the face of the unit housing, or in some other way designed to prevent taping or wedging the button in the engaged mode.

**453.26.2.3** The device shall have an interface relay with the fire alarm system and shall automatically release upon activation of the fire alarm.

**453.26.2.4** The locking device shall automatically disengage in the event of a power failure.

**453.26.2.5** Timers shall not be used on the locking device.

**453.26.3 Door requirements.** The door shall have only a push plate exposed on the interior of the room.

**453.26.3.1** The door shall swing out of the room and shall be equipped with a fully concealed track type closer.

***Change Section 453.26.3.2 to read as shown:***

**453.26.3.2** A vision panel shall be provided in the door, and it shall be no larger than 144 square inches (0.093 ~~.1~~ m2). The view panel shall consist of a clear ¼ -inch-thick (6 mm) unbreakable plastic panel flush with the inside face of the door on the inside of the room. The panel shall be positioned in the door so that a staff member may continuously keep the student under surveillance.

**453.26.3.3** The door frame and jamb/head reveal on the inside shall be minimal. If provided, a flat metal threshold shall be used.

**453.26.4 Finishes.** The floor and walls shall be durable, vandal-resistant materials. The ceiling shall be of a solid and moisture-resistant material. There shall be no projections or protrusions from the walls, ceiling, or floor. All surfaces shall be smooth and no electrical outlets, switches, plumbing clean-outs or similar items shall be inside the room. The room shall not contain anything that can be set on fire, torn, shredded or otherwise used for self-harm.

**453.26.5 Minimum size.** The room shall be designed for a single occupant only and shall be a minimum of 6 feet by 6 feet (1828 mm by 1828 mm).

**453.26.6 Lighting.** The room shall have a recessed vandalproof light fixture in the ceiling capable of being dimmed. The light switch shall be located outside the room adjacent to the door jamb.

**453.26.7 HVAC required.** Time-out rooms shall be mechanically heated and cooled. Registers shall be ceiling mounted and vandalproof.

**453.27 New relocatable buildings.**

***Change Section 453.27.1 to read as shown:***

**453.27.1 Relocatables.** The terms "relocatable" and "portable" are interchangeable and both terms are used to describe buildings which are constructed to the same building codes as permanent public school buildings, except they are designed to be moved. These buildings may be manufactured in a plant, constructed on site, may be made of demountable components, and may be combined. All new relocatable or portable classrooms shall be designed and constructed in compliance with the *Florida Building Code*, the *Florida Fire Prevention Code* as adopted by the State Fire Marshal and the Department of Business and Professional Regulation ~~Community Affairs~~ rules for factory-built school buildings (see Section 458). The requirements for new relocatables contained herein are in addition to the minimum requirements of the *Florida Building Code* and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal. New relocatables which do not comply with the building codes, fire codes and these standards shall not be used as classrooms or for any other student occupancy. ~~For code requirements and other standards applicable to relocatables constructed prior to this code, which may be Type V (wood) relocatables, see Existing Relocatables, Volume 1, Section 5(2), State Requirements for Educational Facilities as referenced in the~~ *~~Florida Fire Prevention Code~~* ~~as adopted by the State Fire Marshal.~~

**453.27.1.1** Factory-built school shelter means any site-assembled or factory-built school building that is designed to be portable, relocatable, demountable or reconstructable and that complies with the provisions for enhanced hurricane protection areas, as required by the applicable code (see Section 453.25).

**453.27.2 Design, plan approval, construction.** Regardless of cost or fund source, whether used for classroom, auxiliary or ancillary space, whether leased, purchased, contracted, or constructed by the school board or Florida college board, plans and documents for relocatables, portables and modular schools shall be prepared by Florida registered design professionals and submitted to the authority having jurisdiction for review and approval for compliance with Florida laws, rules, building and life safety codes. The buildings shall be constructed and inspected by personnel licensed, certified or trained as required by Florida construction industry licensing laws.

**453.27.2.1** **District-wide foundation plans.** District-wide foundation plans for tie down and wind resistance for each type of relocatable and each type of known soil condition in the district, shall be prepared and reviewed at the time of the design and shall be required as a part of the approval of any relocatable. These documents shall be kept on file in the district, with an additional copy in each relocatable filed together with current annual local fire inspection reports, as required by law. The foundation plans shall be reviewed and updated when necessary for compliance with current code for subsequent installations of the relocatable. Relocatables which do not meet the requirements of code for tie down and wind resistance shall not be occupied.

**453.27.2.2 DOT Requirements.** Relocatable units designed to be moved on state roads shall comply with the maximum unit height, length and width requirements of the DOT.

**453.27.2.3 Inventory/construction date signage.** A FISH inventory room number and the date of construction shall be noted on an inventory sign permanently affixed outside, beside or above the door, on all relocatables owned or leased by a district.

**453.27.3 Construction type.** All new relocatables constructed, purchased or otherwise acquired by a board shall be noncombustible Type I, II or IV construction.

***Change Section 453.27.4 to read as shown***

**453.27.4 Accessibility.** All relocatables constructed, purchased or otherwise acquired by a board after the effective date of these standards shall comply with the Americans with Disabilities Act as modified by Chapter 553*, Florida Statutes*, *Florida Building Code Accessibility*. Relocatables intended for use at facilities housing up to grades 5 or 6, shall also conform to the federal criteria ADA *Accessibility Guidelines ~~Standards~~ for Building Elements Designed for Children's Use ~~Environments~~*, which is available from the U.S. Architectural and Transportation Barriers Compliance Board.

**453.27.5 Site standards/site plan**. Relocatables placed on educational plant sites shall comply with federal and state laws and rules relating to the placement of structures on sites, as well as building code, fire code site requirements.

**453.27.5.1 Floodplain**. Compliance with floodplain standards is required for the initial and subsequent installation of public educational relocatable units. The finished floor shall be 12 inches (305 mm) above base flood elevation, the structure shall be designed to meet the *Florida Building Code* and anchored to resist buoyant forces.

**453.27.5.2 Covered walks and technology.** New relocatables and "modular schools" acquired by a board which are intended for long term use, shall be connected from exit door to the core facilities by accessible covered walkways, and shall contain wiring and computer technologies which connect to the facility's technology, communications and fire alarms infrastructure.

**Exceptions:**

1. Covered walks and public address systems are not required Florida college facilities.

2. Temporary relocatables constructed after the date of this standard shall meet all construction requirements of this code, except that covered walks may be installed. The term "temporary relocatable" means relocatables which are used for less than three years to provide temporary housing while permanent replacement classrooms and related facilities are under construction, renovation or remodeling. The term "temporary relocatable" does not apply to relocatables which have been located on a school site for more than two years and used for classrooms or for student occupancy, where there is no identifiable permanent facility which is under construction, being remodeled, or renovated to house the students.

**453.27.5.3 Separation of units**. Type I, II or IV, (noncombustible) relocatable units shall be separated as required by the *Florida Building Code* and the school site plan.

**453.27.6 Structure.** Relocatable structures shall be positively anchored and designed to comply with *Florida Building Code* requirements.

**453.27.7 Fire-retardant-treated wood (FRTW).** Only FRTW which does not contain ammonium phosphates, sulfates, or halides may be used in the roof structure of Type II construction, as authorized by other sections of the *Florida Building Code*. FRTW shall comply with the specific requirements found elsewhere in these public educational facilities requirements. Contractors shall provide evidence of compliance to inspectors. Inspection access panels shall be provided to facilitate initial and annual inspections for general condition assessment of FRTW and connectors.

**453.27.8 Doors.** Exit doors shall swing in the direction of exit travel.

***Change Section 453.27.8.1 to read as shown:***

**453.27.8.1 Classroom locksets.** Each door shall be equipped with a lockset, which is readily opened from the side from which egress is to be made at all times, a threshold, heavy duty hinges, and closer to control door closing. Each door shall have a view panel, with minimum dimensions of 8 inches (203 mm) by 42 inches (1067 mm) and a maximum of 1,296 square inches (.84 m2), of ¼ inch (6 mm) tempered or safety glass installed with the bottom edge of the panel at 30 inches (762 mm) AFF. Each exterior door shall be protected from the elements by a roof overhang.

**453.27.8.2 Roofed platform.** All exterior doors shall open onto a minimum 5 foot by 5 foot (1524 mm by 1524 mm) roofed platform with handrails, which is level with the interior floor.

**453.27.9 Operable windows.** Classrooms shall have operable windows equal to at least 5 percent of the floor area of the unit where required by Section 1013.44, Florida Statutes. Exterior doors may be included in computing the required 5 percent. Awning, casement, or projecting windows shall not be placed in walls with adjacent walks, ramps, steps or platforms.

**453.27.9.1 Rescue.** Windows for emergency rescue shall comply with NFPA 101, Florida edition as adopted by the *Florida Fire Prevention Code*, shall be operable from the inside by a single operation and shall be labeled "EMERGENCY RESCUE–KEEP AREA CLEAR."

**453.27.10 Finishes.** Finishes in relocatable units shall comply with the following:

**453.27.10.1 Interior walls and ceilings**. Interior wall and ceiling finishes in classrooms and other student use spaces shall be Class A or B as defined in NFPA 101, Florida edition as adopted by the *Florida Fire Prevention Code*. Corridor finishes shall be Class A. Formaldehyde levels shall not exceed the minimum HUD standards for manufactured housing.

**453.27.10.2 Floors.** Floors shall be covered with resilient material, carpet, or other finished product. Carpet in classrooms shall be tested and certified by the manufacturer as passing the Radiant Panel Test Class II. Carpet in corridors shall be tested and certified by the manufacturer as passing the Radiant Panel Test Class I.

**453.27.10.3 Toilet rooms, showers and bathing facilities**. Partitions and walls separating group toilet rooms shall be extended to the bottom of the roof deck.

**453.27.10.3.1** Toilet room floors and base shall be finished with impervious nonslip materials. Toilet room walls shall be finished with impervious materials which shall be extended to a minimum height of 6 feet (1828 mm).

**453.27.10.3.2** Ceilings shall be of solid-type moisture-resistant materials.

**453.27.11 Fire extinguishers.** At least one appropriate fire extinguisher shall be provided in each relocatable classroom unit and in each classroom of a multiclassroom building.

**453.27.12 Document storage.** Provision shall be made to secure foundation plans and to post the annual fire inspection report within each relocatable unit.

**453.27.13 Time-out rooms.** Time-out rooms are not recommended but, when provided, shall comply with the specific requirements for time-out rooms found elsewhere in these public educational facilities code requirements.

**453.27.14 Child care/day care units**. Standard classroom units intended to house birth to age 3 children, including Teenage Parent Programs (TAP), shall meet the additional criteria under the title of *Child Care/Day Care/Prekindergarten Facilities* for permanent buildings contained in these public educational facilities requirements, as well as the following:

**453.27.14.1** All TAP spaces where residential kitchens are provided shall have two doors exiting directly to the outside and remotely located from each other. Areas designated for children's sleeping mats, cots or cribs, shall have a clearly marked exit passageway.

**453.27.15** Illumination required. Illumination in classroom units shall be designed to provide an average maintained 50 footcandles (500 lux) at desk top.

**453.27.15.1** Emergency lighting. Each classroom unit shall be equipped with emergency lighting.

**453.27.15.2** Exterior lighting. Exterior lighting shall be provided as required elsewhere in these public educational facilities code requirements.

**453.27.15.3 Exit lighting.** Exit lights shall be provided as required by the *Florida Fire Prevention Code* adopted by the State Fire Marshal.

**453.27.16 Air conditioning, heating and ventilation.** Relocatable facilities shall meet *Florida Building Code* requirements.

**453.27.17 Technology.** Relocatables shall contain wiring and computer technology appropriate for the programs to be housed.

**453.27.18 Fire safety requirements.** New relocatables shall be provided with fire alarm devices meeting the code requirements for permanent educational facilities and shall be connected to the facility's main fire alarm system as required by code.

**453.27.19 Inspection of units during construction.** Boards shall provide for the inspection of relocatables during construction, as required by the *Florida Building Code*, as authorized by statute.

**453.27.20 Inspection of units prior to occupancy.** Prior to occupancy new relocatables shall be inspected and approved for compliance to the *Florida Building Code*. New units shall have foundation plans provided and secured, in the relocatable along with the local fire inspector report. Certification of such inspection shall remain on file with the district. Inventory/date of construction signage shall be affixed to the relocatable. Where FRTW is used inspection access panels shall be provided and within easy reach to facilitate inspection for general condition assessment of FRTW and connectors.

***Section 454 – Swimming Pools and Bathing Places (Public and Private)***

***Add Florida specific requirements from Section 424 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 454**

**SWIMMING POOLS AND BATHING PLACES (PUBLIC AND PRIVATE)**

**454.1 Public swimming pools and bathing places**. Public swimming pools and bathing places shall comply with the design and construction standards of this section.

**454.1.1 Flood hazard areas.**  Public swimming pools installed in flood hazard areas established in Section 1612.3 shall comply with Section 1612.

**NOTE:** Other administrative and programmatic provisions apply. See Department of Health (DOH) Rule 64E-9, *Florida Administrative Code* and Chapter 514, *Florida Statutes*. The regulation and enforcement of the initial and annual operation permit for public pools are preempted to the DOH. The construction permit holder is responsible for obtaining an operation permit issued by DOH, as a public swimming pool shall not be put into operation without an inspection and operation permit issued from the DOH. DOH may grant variances from the provisions of the Florida Building Code specifically pertaining to public swimming pools and bathing places as authorized by Section 514.0115, Florida statutes. Building officials shall recognize and enforce variance orders issued by the Department of Health pursuant to s. 514.0115(5), Florida Statutes including any conditions attached to the granting of the variance.

**"Bathing load"** means the maximum number of persons allowed in the pool or bathing place at one time.

**"Collector tank"** means a reservoir, with a minimum of 2.25 square feet water (0.2 m2) surface area open to the atmosphere, from which the recirculation or feature pump takes suction, which receives the gravity flow from the main drain line and surface overflow system or feature water source line, and that is cleanable.

***Change the definition of “department” to read as shown:***

**"Department"** means the permitting/inspection authority ~~jurisdictional Building Department of Health~~.

**"Effective barrier"** A barrier which consists of a building, or equivalent structure, plus a 48-inch (1219 mm) minimum height fence on the remaining sides or a continuous 48-inch (1219 mm) minimum height fence. All access through the barrier must have one or more of the following safety features: alarm, key lock or self-locking doors and gates. Safety covers that comply with the American Society for Test Materials standard F1346-91 (2003) may also be considered as an effective barrier.

**"D.E."** is the Diatomaceous Earth that is used as a filter aid in D.E.-type filters. For the purpose of this rule, it also includes alternative filter aids that have been approved under NSF/ANSI Standard 50-2007, and accepted by the filter manufacturer.

**"Interactive water features"** means a structure designed to allow for recreational activities with recirculated, filtered, and treated water; but having minimal standing water. Water from the interactive fountain type features is collected by gravity below grade in a collector tank or sump. The water is filtered, disinfected and then pumped to the feature spray discharge heads.

**"Modification"** means any act which changes or alters the original characteristics of the pool as approved. For example, changes in the recirculation systems, decking, treatment systems, disinfection system and pool shape are modifications.

**"Marking" or "Markings"** refers to the placement and installation of visual marking cues to help patrons identify step, bench and swimout outlines, slope break location, depth designations and NO ENTRY and NO DIVING warnings. When markings are specified by code to be dark the term "dark" shall mean a Munsell Color Value from zero to four.

**"Perimeter overflow gutter"** means a level trough or ledge around the inside perimeter of the pool containing drains to clean the pool water surface.

**"Plunge pool"** means the receiving body of water located at the terminus of a recreational water slide.

**"Pool floor"** means the interior pool bottom surface which consists of that area from a horizontal plane up to a maximum of a 45-degree slope.

**"Pool wall"** means the interior pool side surfaces which consist of that area from a vertical plane to a 45-degree slope.

**"Pool turnover"** means the circulation of the entire pool volume through the filter system. Pool volume shall be determined from the design water level which is the normal operating water level; for gutter-type pools it is the horizontal plane of the upper lip of the gutter and for skimmer pools it is the centerline of the skimmer opening.

**"Precoat pot"** means a container with a valved connection to the suction side of the recirculation pump of a pressure diatomaceous earth (D.E.) type filter system used for coating the filter with D. E. powder or NSF/ANSI Standard 50-2007 and manufacturer approved substitute filter aid.

A **"public swimming pool"** or "public pool" means a watertight structure of concrete, masonry, or other approved materials 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, but is not limited to, 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, boardinghouses, hotels, mobile home parks, motels, recreational vehicle parks, and townhouses. The term does not include a swimming pool located on the grounds of a private residence.

**"Recirculation system"** means the system of piping and mechanics designed to remove the water from the pool then filter, disinfect and return it to the pool.

**"Slip resistant"** means having a textured surface which is not conducive to slipping under contact of bare feet unlike glazed tile or masonry terrazzo and nontextured plastic materials. manufactured surface products shall be designated by the manufacturer as suitable for walking surfaces in wet areas.

**"Spa pool"** means a pool used in conjunction with high-velocity air or water.

**"Special purpose pool"** means a public pool used exclusively for a specific, supervised purpose, including springboard or platform diving training, SCUBA diving instruction, and aquatic programs for persons with disabilities, preschool or kindergarten children.

**"Swimming pool slide"** is a slide designed by its manufacturer to discharge over the sidewall of a swimming pool.

**"Swim spa"** is a pool used in conjunction with a directional flow of water against which one swims.

**"Wading pool"** means a shallow pool designed to be used by children.

**"Water recreation attraction**" means a facility with design and operational features that provide patron recreational activity and purposefully involves immersion of the body partially or totally in the water. Water recreation attractions include water slides, river rides, water course rides, water activity pools, interactive water features, wave pools and any additional pool within the boundaries of the attraction.

**"Water activity pool"** means a water recreation attraction which has water-related activities such as rope ladders, rope swings, cargo nets and other similar activities.

**"Water slides"** means a water recreation attraction ride which is characterized by having trough-like or tubular flumes or chutes.

**"Water Theme Park"** means a complex with controlled access, a fenced and gated attraction where guests enter through a limited number of entrances upon purchase of a ticket. These facilities are permanent and consist of multiple water recreation attractions. Lifeguards are present during all operating hours.

**"Water therapy facilities,"** as that term is used in Section 514.0115, Item 1, *Florida Statutes*, are pools used exclusively for water therapy to treat a diagnosed injury, illness or medical condition, wherein the therapy is provided under the direct supervision of a Florida licensed physical therapist, occupational therapist or athletic trainer; pursuant to prescription by a physician or a physician's assistant (PA) licensed pursuant to Chapters 458 or 459, *Florida Statutes*, a podiatrist licensed pursuant to Chapter 461, *Florida Statutes*., or an advanced registered nurse practitioner (ARNP) licensed pursuant to Chapter 464, *Florida Statutes*; and the prescribing physician, PA, podiatrist or ARNP authorizes a plan of treatment justifying use of the pool for health care purposes.

**"Wade pool"** means a water recreation attraction ride which is characterized by having trough-like or tubular flumes or chutes.

**"Wave pool"** means a water recreation attraction that is characterized by wave action.

**"Wet deck area"** means the 4-foot-wide (1219 mm) unobstructed pool deck area around the outside of the pool water perimeter, curb, ladders, handrails, diving boards, diving towers, or pool slides, waterfalls, water features, starting blocks, planters or lifeguard chairs.

**"Zero depth entry pool"** means a pool where the pool floor continues to slope upward to a point where it meets the surface of the water and the pool deck.

**454.1.1.1 Sizing.** The bathing load for conventional swimming pools, wading pools, interactive water features, water activity pools less than 24 inches (610 mm) deep and special purpose pools shall be computed on the basis of one person per 5 gpm (.32 L/s) of recirculation flow. The bathing load for spa type pools shall be based on one person per each 10 square feet (.9 m2) of surface area. The filtration system for swimming pools shall be capable of meeting all other requirements of these rules while providing a flow rate of at least 1 gpm (.06 L/s) for each living unit at transient facilities and 3/4 gpm (.04 L/s) at nontransient facilities. Recreational vehicle sites, campsites and boat slips designated for live-aboards shall be considered a transient living unit. For properties with multiple pools, this requirement includes the cumulative total gpm of all swimming pools, excluding spas, wading pools and interactive water features. All other types of projects shall be sized according to the anticipated bathing load and proposed uses. For the purpose of determining minimum pool size only, the pool turnover period used cannot be less than 3 hours.

**454.1.2 Swimming pool construction standards.**

***Change Section 454.1.2.1 to read as shown***

**454.1.2.1 Pool structure.** Pools shall be constructed of concrete or other impervious and structurally rigid material. All pools shall be watertight, free from structural cracks and shall have a nontoxic smooth and slip-resistant finish. All materials shall be installed in accordance with manufacturer's specifications unless such specifications violate Chapter 64E-9, *Florida Administrative Code*, rule requirements or the approval criteria of NSF/ANSI Standard 50 or NSF/ANSI Standard 60.

(a) Floors and walls shall be white or pastel in color and shall have the characteristics of reflecting rather than absorbing light. Tile used in less than 5 feet (1524 mm) of water must be slip resistant. A minimum 4-inch (102 mm) tile line, each tile a minimum size of 1 inch (25 mm) on all sides, shall be installed at the water line, but shall not exceed 12 inches (305 mm) in height if a dark color is used. Gutter type pools may substitute 2-inch (51 mm) tile, each a minimum size of 1 inch (25 mm) on all sides, along the pool wall edge of the gutter lip.

(b) One-inch (25 mm) square tile may be used if ~~the licensed contractor provides a signed written certification to the approving department engineer that the adhesive used on the one-inch (25 mm) square tile has a manufacturer's tested shear strength of at least 250 psi (1724 kPa) and~~ the manufacturer has specified the adhesive for use underwater to adhere the type of tile used [vitreous (glass) or ceramic]. Tiles shall not have sharp edges exposed that could cause bather injury.

**454.1.2.2 Dimensions.**

**454.1.2.2.1 Dimensional standards.** Dimensional standards for competition type pools shall be those published by the National Collegiate Athletic Association, 1990; Federation Internationale de Natation Amateur (FINA), 1998-2000 Handbook; 1998-1999 Official Rules of Diving & Code Regulation of United States Diving Inc.; 1998 United States Swimming Rules and Regulations, and National Federation of State High School Associations, 1997-1998, which are incorporated by reference in this code.

**454.1.2.2.2 Walls and corners.** All pool walls shall have a clearance of 15 feet (4572 mm) perpendicular to the wall (as measured at design water level from gutter lip to gutter lip, or on skimmer pools, from vertical wall to vertical wall). Offset steps spa coves, spa pools and wading pools are exempt from this clearance requirement. Where interior steps protrude into the pool resulting in less than 15 feet (4572 mm) of clearance from any wall, such protrusion shall not exceed 6 feet (1828 mm) on any perpendicular line from a tangent to any pool wall from which the steps emanate. The upper part of pool walls in areas 5 feet deep or less shall be within 5 degrees (4572 mm) vertical for a minimum depth of 2½ feet (762 mm) from which point the wall may join the floor with a maximum radius equal to the difference between the pool depth and 2½ feet. The upper part of pool walls in areas over 5 feet deep shall be within 5 degrees vertical for a minimum depth equal to the pool water depth minus 2½ feet (762 mm) from which point the wall may join the floor with a maximum radius of 2½ feet (762 mm). Corners shall be a minimum 90-degree angle. The corner intersections of walls which protrude or angle into the pool water area shall be rounded with a minimum radius of 2 inches (51 mm). This radius shall be continued through the top of the gutter edge; chamfering is allowed, pool coping shall not overhang into the pool more than 1½ inches (38 mm).

**454.1.2.2.3 Pool floor slope and slope transition.** The radius of curvature between the floor and walls is excluded from these requirements. multiple floor levels in pools are prohibited.

***Change Section 454.1.2.2.3.1 to read as shown***

**454.1.2.2.3.1 Floor slope shall be uniform.** The floor slope shall be a maximum 1 unit vertical in 10 units horizontal and a minimum of 1 unit vertical in 60 ~~40~~ units horizontal in areas 5 feet (1524 mm) deep or less. The floor slope shall be a maximum 1 unit vertical in 3 units horizontal in areas more than 5 feet (1524 mm) deep.

**454.1.2.2.3.2** Any transition in floor slope shall occur at a minimum of 5 feet (1524 mm) of water depth. A slope transition must have a 2 to 6 inch (51 to 152 mm) wide dark contrasting tile marking across the bottom and must extend up both sides of the pool at the transition point. The marking shall be continuous except for recessing grouting. A slope transition must have a safety line mounted by use of recessed cup anchors, 2 feet (610 mm) before the contrasting marking, towards the shallow end. The safety line shall have visible floats at maximum 7-foot (2134 mm) intervals.

**454.1.2.2.4 Pool depths.** The minimum water depth shall be 3 feet (914 mm) in shallow areas and 4 feet (1219 mm) in deep areas.

**454.1.2.3 Markings.**

**454.1.2.3.1 Depth and markings**. Depth and markings shall meet the following criteria:

1. The minimum water depth shall be 3 feet (914 mm) in shallow areas and 4 feet (1219 mm) in deep areas.

2. Permanent depth markings followed by the appropriate full or abbreviated words "FEET," "FT," or "INCHES," "IN," shall be installed in minimum 4-inch-high (102 mm) numbers and letters on a contrasting background. Depth markers shall indicate the actual pool depth, within 3 inches (76 mm), at normal operating water level when measured 3 feet (914 m3) from the pool wall. Symmetrical pool designs with the deep point at the center may be allowed provided a dual marking system is used which indicates the depth at the wall and at the deep point.

3. At a minimum, the markings shall be located on both sides of the pool at the shallow end, slope break, deep end wall and deep point (if located more than five feet from the deep end wall). Depth markings shall be legible from inside the pool and also from the pool deck. The maximum perimeter distance between depth markings is 25 feet (7620 mm). Pool size and geometry may necessitate additional depth marking placements about all sides of the pool to meet this requirement.

4. When a curb is provided, the depth markings shall be installed on the inside and outside or top of the pool curb. When a pool curb is not provided, the depth markings shall be located on the inside vertical wall at or above the water level and on the edge of the deck within 2 feet (610 mm) of the pool water. When open type gutter designs are utilized, depth markers shall be located on the back of the gutter wall.

5. When deck level perimeter overflow systems are utilized, additional depth marking signs shall be posted nearby or placed on adjacent fencing or walls and the size shall be increased so they are recognizable from inside the swimming pool. Alternatively, tile depth markers may be placed at the top of the pool wall just under the water level. Depth markers placed on the pool deck shall be within 3 feet (914 mm) of the water.

6. Those areas of the pool that are not part of an approved diving bowl shall have dark contrasting tile, 4-inch-high (102 mm) "NO DIVING" markings installed along the perimeter of the pool on the top of the pool curb or deck within 2 feet (610 mm) of the pool water with a maximum perimeter distance of 25 feet (7620 mm) between markings. A 6-inch (152 mm) tile with a 4-inch (102 mm) or larger red, international "NO DIVING" symbol may be substituted for the "NO DIVING" markings.

7. All markings shall be tile, except that pools constructed of fiberglass, thermoplastic or stainless steel may substitute other type markings when it can be shown that said markings are permanent and will not fade over time. This exemption does not extend to concrete pools that are coated with fiberglass. Tile alternative examples include stone or manufactured plaques with engraved or sandblasted numbers and characters with permanent paint. Permanent appliqués may be used for fiberglass, thermoplastics or stainless steel pools. All markings installed on horizontal surfaces shall have a slip-resistant finish. Markings shall be flush with the surrounding area where placed and recessed if necessary to provide a smooth finish that will avoid creation of an injury hazard to bathers. Pools that are not conducive to tile can employ other equivalent markings as stated above.

**454.1.2.3.2 Designs or logos.** Any design or logo on the pool floor or walls shall be such that it will not hinder the detection of a human in distress, algae, sediment, or other objects in the pool.

# 454.1.2.3.3 Lane markings. Pools that are not intended to be utilized for officially sanctioned competition may install lap lane markings provided they meet the following criteria: the markings must be 2 to 6 inches (51 to 152 mm) wide, they must terminate 5 feet (1524 mm) from the end wall in a "T" with the "T" bar at least 18 inches (1524 mm) long, they must be placed at 7-foot (2134 mm) intervals on center and be no closer than 4 feet (1219 mm) from any side wall, steps or other obstructions. Floating rope lines associated with lap lanes must not obstruct the entrance or exit from the pool and are prohibited when the pool is open for general use.

# 454.1.2.3.4 Targets. Pools that are not intended for officially sanctioned competition may have a 2 to 6 inch (51 to 152 mm) wide 18-inch by 18-inch (457 mm by 457 mm) targets (+) installed on the pool wall.

**454.1.2.3.5 Rules and regulations signage.** Rules and regulations for bathers shall be installed ~~posted~~ in minimum 1 inch letters which must be legible from the pool deck, and shall contain the following:

1. No food or beverages in pool or on pool wet deck.

2. No glass or animals in the fenced pool area (or 50 feet from unfenced pool).

3. Bathing load: \_\_\_ persons.

4. Pool hours: \_\_ a.m. to \_\_ p.m.

5. Shower before entering.

6. Pools of 200 square feet in area or greater without an approved diving well configuration shall have “NO DIVING”, in four inch letters included with the above listed pool rules.

7. Do not swallow the pool water. This statement shall be added to signs at pools that conduct modifications as that term is defined.

**454.1.2.4 Color**. Pool floors and walls shall be white or light pastel in color and shall have the characteristic of reflecting rather than absorbing light.

**Exception:** A dark color may be used if (1) a tile line [minimum 4 inches (102 mm), maximum 12 inches (305 mm)] is installed at the water line or (2) if 2-inch (51 mm) tile is installed along the pool wall edge of the gutter lip for gutter type pools.

**454.1.2.5 Access**. All pools shall have a means of access every 75 feet (22,860 mm) of pool perimeter with a minimum of two, located so as to serve both ends of the pool. In addition, an access point shall be provided at the deep portion, if the deep portion is not at one end of the pool. When the deep portion of the pool is over 30 feet (9144 mm) wide both sides of this area shall have a means of access. Access shall consist of ladders, stairs, recessed treads or swimouts and may be used in combination. All treads shall have a slip-resistant surface.

**454.1.2.5.1 Ladders.** Ladders shall be of the cross-braced type and shall be constructed of corrosion-resistant materials and be securely anchored into the pool deck. Clearance between the ladder and pool wall shall be between 3 to 6 inches (76 mm to 152 mm). Ladders shall extend at least 28 inches (711 mm) and no more than 40 inches (1016 mm) above the pool deck. Ladder bottom braces shall have intact end caps or bumpers that rest firmly against the pool wall. The top rung of the ladder shall be at or below the water level on open gutter pools and not more than 12 inches (305 mm) below the deck or curb top on all other type pools.

**454.1.2.5.2 Recessed treads.** Recessed treads shall be installed flush with the wall and shall be a minimum five inches wide, 10 inches (254 mm) long, with a maximum vertical distance of 12 inches (305 mm) between treads.

**454.1.2.5.3 Stairs.** Stairs shall have a minimum tread width of 10 inches (254 mm) and a maximum width of 48 inches (1219 mm) for a minimum tread length of 24 inches (610 mm) and a maximum riser height of 10 inches (254 mm). Treads and risers between the top and bottom treads shall be uniform to within 1/2 inch (12.7 mm) in width and height. The riser heights shall be measured at the marked step edges and the differences in elevation shall be considered the riser heights. The front 3/4 to 2 inches (19.1 to 51 mm) of the tread and the top 2 inches (51 mm) of the riser shall be tile, dark in color, contrasting with the interior of the pool. Tile shall be slip resistant. Bullnose tile that is slip resistant may be used when the 3/4 inch (19 mm) segment is placed on the tread or horizontal surface and the 2-inch (51 mm) segment is placed on the riser or vertical surface. Where the gutter is used as the top step, the tile on the gutter for the width of the steps shall be slip resistant. Vinyl liner and fiberglass pools may use other material for the step edge marking, provided the material is permanent, permanently secured, dark in color, nonfading and slip resistant.

**454.1.2.5.4 Swimouts.** Swimouts shall extend 18 to 24 inches (610 mm) back from the pool wall, shall be 4 to 5 feet (1219 mm to 1524 mm) wide, shall be a maximum of 12 inches (305 mm) below the deck, unless stairs are provided in the swimout, and shall be located only in areas of the pool greater than 5 feet (1524 mm) deep. Pools that do not utilize a continuous perimeter overflow system must provide a wall return inlet in the swimout for circulation. A permanent dark contrasting colored band of tile shall be installed at the intersection of the pool wall and the swimout and must extend 2 inches (51 mm) on the horizontal and vertical surfaces. Tile must be slip resistant. Bullnose tile may be substituted and installed in accordance with Section 454.1.2.5.3 above.

**454.1.2.5.5 Handrails and grabrails**. Handrails shall be provided for all stairs, shall be anchored in the bottom step and the deck. Where "figure 4" deck-mounted type handrails are used, they shall be anchored in the deck and extend laterally to any point vertically above the bottom step. Grabrails must be mounted in the pool deck at each side of recessed steps. Handrails and grabrails shall extend between 28 and 40 inches (711 mm and 1016 mm) above the step edge and deck.

**454.1.2.5.6 Disabled access.** Permanent or portable steps, ramps, handrails, lifts or other devices designed to accommodate handicapped individuals in swimming pools may be provided. Lifts mounted into the pool deck shall have a minimum four-foot-wide (1219 mm) deck behind the lift mount.

**454.1.2.6 Obstructions.** The pool water area shall be unobstructed by any type structure unless justified by engineering design as a part of the recirculation system. Engineering design and material specifications shall show that such structures will not endanger the pool patron, can be maintained in a sanitary condition and will not create a problem for sanitary maintenance of any part of the pool, pool water, or pool facilities. Structures in accord with the above shall not be located in a diving bowl area or within 15 feet (4572 mm) of any pool wall.

**Exceptions:**

1. Stairs, ladders and ramps, necessary for entrance/exit from the pool are not considered obstructions.

2. Underwater seat benches may be installed in areas less than five feet (1524 mm) deep. Bench seats must be 14 to 18 inches (356 to 457 mm) wide and must have a dark contrasting tile marking on the seat edge extending two inches (51 mm) on the horizontal and vertical surface. Tile shall be slip resistant. Bullnose tile may be substituted and installed in accordance with Section 454.1.2.5.3. Vinyl liner, stainless steel and fiberglass pools may use other material for the bench edge marking as detailed in Section 454.1.2.3.1, Item 7, above, provided the material is permanently secured, dark in color, nonfading and slip resistant. Benches shall not protrude into the 15-foot (4572 mm) clearance requirement of Section 454.1.2.6.

**454.1.2.7 Diving areas**. Diving facilities shall meet the minimum requirements of the FINA dimensions for diving facilities in accordance with the 2005-2009 FINA Handbook and include the following

1. Diving boards or platforms with heights of less than the established standard shall meet the dimensional requirements of the next greater height.

2. Diving boards, platforms and ladders shall have a nonabsorbent, slip-resistant finish and be of sufficient strength to safely carry the anticipated loads. Diving equipment one meter and greater shall have guard rails which extend to the edge of the pool wall. All diving boards over 21 inches (533 mm) from the deck shall be provided with a ladder. Diving boards or platforms shall not be installed on curved walls where the wall enters into the defined rectangular diving area specified in this section. Adjacent platform and diving boards shall be parallel.

3. The location of pool ladders shall be such that the distance from the ladder to any point on a diving board or platform centerline is not less than the plummet to side wall dimension (b) indicated in the FINA standards. Trampoline-type diving facilities are prohibited.

4. Diving targets may be installed in accordance with FINA standards.

**454.1.3 Pool appurtenances.**

**454.1.3.1 Decks and walkways.**

**454.1.3.1.1** Pool wet decks shall be constructed of concrete or other nonabsorbent material having a smooth slip-resistant finish. Wet deck area finishes shall be designed for such use and shall be installed in accordance with the manufacturer's specifications. Wooden decks and walkways are prohibited.

**454.1.3.1.2** Pool wet decks shall be uniformly sloped at a minimum of 2 percent to a maximum of 4 percent away from the pool or to deck drains to prevent standing water. Textured deck finishes that provide pitting and crevices of more than 3/16 inch (4.8 mm) deep that accumulate soil are prohibited. If settling or weathering occurs that would cause standing water, the original slopes shall be restored or corrective drains installed. When a curb is provided, the deck shall not be more than 10 inches (254 mm) below the top of the curb.

**454.1.3.1.3** Pool wet decks shall have a minimum unobstructed width of four feet (1219 mm) around the perimeter of the pool, pool curb, ladders, handrails, diving boards, diving towers and slides.

**454.1.3.1.4** Traffic barriers shall be provided as needed so that parked vehicles do not extend over the deck area.

**454.1.3.1.5** Walkways shall be provided between the pool and the sanitary facilities, and shall be constructed of concrete or other nonabsorbent material having a smooth slip-resistant finish for the first 15 feet (4572 mm) of the walkway measured from the nearest pool water's edge. A hose bibb with a vacuum breaker shall be provided to allow the deck to be washed down with potable water.

***Change Section 454.1.3.1.6 to read as shown***

**454.1.3.1.6** ~~Ten~~ Twenty percent of the deck along the pool perimeter may be obstructed as long as any one obstruction does not exceed ten percent or ten feet, whichever is less, in any one area. Obstructions shall have a wet deck area behind or through them, with the near edge of the walk within 15 feet (4572 mm) of the water except approved slide obstructions shall have the near edge of the walk within 35 feet (10 668 mm) of the water. These obstructions must be protected by a barrier or must be designed to discourage patron access. Obstructions shall not include pool exit points.  When an obstruction exists in multiple areas around the pool the minimum distance between obstructions shall be 4 feet (1219 mm).

**454.1.3.1.7** Food or drink service facilities shall not be located within 12 feet (3658 mm) of the water's edge.

**454.1.3.1.8** The vertical clearance above the pool deck shall be at least 7 feet (2137 mm).

***Change Section 454.1.3.1.9 to read as shown***

**454.1.3.1.9** All public pools shall be surrounded by a minimum 48 inch (1219 mm) high fence or other approved substantial barrier. The fence shall be continuous around the perimeter of the pool area that is not otherwise blocked or obstructed by adjacent buildings or structures and shall adjoin with itself or abut to the adjacent members. Access through the barrier or fence from dwelling units, such as homes, apartments, motel rooms and hotel rooms, shall be through self-closing, self-latching lockable gates of 48 inch (1219 mm) minimal height from the floor or ground with the latch located a minimum of 54 inches (1372 mm) from the bottom of the gate or at least 3 inches (76 mm) below the top of the gate on the pool side. If the self-closing, self-latching gate is also self-locking and is operated by a key lock, electronic opener or integral combination lock, then the operable parts of such locks or openers shall be 34 inches minimum (864 mm) and 48 inches maximum (1219 mm) above the finished floor or ground. Doored access points from public rooms such as lobbies or club houses need not be through gates if the door(s) meet the same self-closing, self-latching requirements as a gate.  Gates shall open outward away from the pool area. A latched, lockable gate shall be placed in the fence within ten feet (3048 mm) of the closest point between the pool and the equipment area for service access.

Instead of a fence, permanent natural or man-made features such as bulkheads, canals, lakes, navigable waterways, etc., adjacent to a pool may be permitted as a barrier when approved. When evaluating such barrier features, the applicable governing body may perform onsite inspections, and review evidence, such as surveys, aerial photographs, water management agency standards and specifications, and any other similar documentation to verify at minimum, the following: 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 a structure, and the barrier feature clearly impedes, prohibits or restricts access to the pool.

Screened pool enclosures must be hardened on the bottom three feet (914 mm). Fencing consideration shall be given to the U.S. Consumer Product Safety Commission (CPSC) Publication, No. 362, March 2005, guidelines available from CPSC.gov; or Sections 454.2.17.1.1 through 454.2.17.1.8. Safety covers that comply with ASTM F 1346-91 (Reapproved 2003), titled *Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas and Hot Tubs*, and available from ASTM.org, do not satisfy this requirement.

***Change Section 454.1.3.2 to read as shown***

**454.1.3.2 Bridges and overhead obstructions or river rides.** Bridges and overhead obstructions over the pool shall be designed so they will not introduce any contamination to the pool water. The minimum height of the bridge or obstruction shall be ~~at least 8 7 feet (2438 mm) from the bottom of the pool and~~ at least 4 feet (1219 mm) above the surface of the pool in all cases except when the pool is a river ride where it shall be at least 5 feet above the surface of the pool. Minimum 42-inch-high (1067 mm) handrails shall be provided along each side of the bridge. The walking surfaces shall be constructed of concrete or other nonabsorbent material having a smooth slip-resistant finish. Pool coping shall not overhang into the pool more than 1 ½ inches (38 mm).

***Add Section 454.1.3.3 to read as shown***

**454.1.3.3 Safety.**

**454.1.3.3.1** All swimming pools shall be installed ~~provided~~ with a shepherd’ s hook securely attached to a one piece pole not less than 16 feet in length, and at least one 18 inch diameter lifesaving ring with sufficient rope attached to reach all parts of the pool from the pool deck. Safety equipment shall be mounted in a conspicuous place and be readily available for use. Pools greater than 50 feet in length shall have multiple units with at least one shepherd’ s hook and one lifesaving ring located along each of the longer sides of the pools. Spa pools under 200 square feet of surface area, and interactive water features or wading pools with two feet or less of water depth are exempt from this requirement.

**454.1.3.3.2** All pools with a slope transition shall have a safety line anchors as required by 424.1.10.1.3. ~~The safety line shall be in place at all times unless a lifeguard or instructor is present.~~

**454.1.3.3.3** ~~Pool covers and solar blankets shall only be used during times when the pool is closed. Unless the~~ If a pool cover or solar blanket is installed, it shall be secured around the entire perimeter and is designed to support a live load of an adult person, OR the pool area shall be inaccessible to unauthorized individuals during times of cover or blanket use.

**454.1.3.3.4** A room or space shall be provided for chemicals to ~~shall~~ be stored in a cool, dry, and well-ventilated area under a roof and the area shall be inaccessible to the public. ~~Chemicals which emit corrosive fumes shall not be stored in the equipment room. Empty chemical containers shall be stored and disposed of in such a manner that they are not accessible to the public.~~

**454.1.3.3.5** Swimming pool slides shall be installed in accordance with manufacturer’s specifications and sound engineering practice. Pools with slides designed for swimming pools are not required to satisfy those of slide plunge pools in 424.1.9.2.1.

**454.1.3.3.6** Floating and climb-on devices, objects or toys that are not a part of the approved pool design shall not be tethered in the pool or installed without engineering modification application and department’s approval.

**454.1.4 Electrical systems.**

**454.1.4.1 Electrical equipment and wiring.** Electrical equipment wiring and installation, including the grounding of pool components shall conform with Chapter 27 of the *Florida Building Code, Building.*

**454.1.4.2 Lighting.** Artificial lighting shall be provided at all swimming pools which are to be used at night or which do not have adequate natural lighting so that all portions of the pool, including the bottom, may be readily seen without glare.

**454.1.4.2.1 Outdoor pool lighting.** Lighting shall provide a minimum of 3 footcandles (30 lux) of illumination at the pool water surface and the pool wet deck surface. Underwater lighting shall be a minimum of 1/2 watt per square foot of pool water surface area.

**454.1.4.2.2 Indoor pool lighting.** Lighting shall provide a minimum of 10 foot candles of illumination at the pool water surface and the pool wet deck surface. Underwater lighting shall be a minimum of 8/10 watt per square foot of pool surface area.

***Change Section 454.1.4.2.3 to read as shown:***

**454.1.4.2.3 Underwater lighting.** Underwater lighting shall utilize transformers and low-voltage circuits with each underwater light being grounded. The maximum voltage for each light shall be 15 volts and the maximum incandescent lamp size shall be 300 watts. The location of the underwater lights shall be such that the underwater illumination is as uniform as possible and shall not be less than 18 inches (457 mm) below the normal operating water level determined by the center-line of the skimmer or top lip of the gutter. All underwater lights which depend upon submersion for safe operation shall have protection from overheating when not submerged. Underwater lighting requirements can be waived when the overhead lighting provides at least 15 footcandles (150 lux) of illumination at the pool water surface and pool wet deck surface. Alternative lighting systems which use 15 volts or less, or use no electricity in the pool or on the pool deck, such as LED (light emitting diode) fiber-optic systems, may be utilized if the manufactures specifications provide for the equivalency in watt output ~~applicant demonstrates to reasonable certainty that the system development has advanced to the point where the department is convinced that the pool illumination is equal to the requirements in Sections 454.1.4.2.1 and 454.1.4.2.2 above~~.

**454.1.4.2.4 Overhead wiring.** Overhead service wiring shall not pass within an area extending a distance of 10 feet (3048 mm) horizontally away from the inside edge of the pool walls, diving structures, observation stands, towers or platforms. Allowances for overhead conductor clearances to pools that meet the safety standards in the *National Electrical Code* may be used instead. Electrical equipment wiring and installation including the grounding of pool components shall comply with Chapter 27 of the *Florida Building Code, Building*.

**454.1.5 Equipment area or rooms.**

**454.1.5.1 Equipment.** Equipment designated by the manufacturer for outdoor use may be located in an equipment area, all other equipment must be located in an equipment room or enclosure. Plastic pipe subject to a period of prolonged sunlight exposure must be coated to protect it from ultraviolet light degradation. An equipment area shall be surrounded with a fence at least 4 feet (1219 mm) high on all sides not confined by a building or equivalent structure. A self-closing and self-latching gate with a permanent locking device shall be provided if necessary for access. An equipment room shall be protected on at least three sides and overhead. Any fence or gate installed shall use members spacing that shall not allow passage of a 4-inch (102 mm) diameter sphere. The fourth side may be a gate, fence, or open if otherwise protected from unauthorized entrance. An equipment enclosure shall be lockable or otherwise protected from unauthorized access.

**454.1.5.2 Indoor equipment.** Equipment not designated by the manufacturer for outdoor use shall be located in an equipment room. An equipment room shall be protected on at least three sides and overhead. The fourth side may be a gate, fence or open if otherwise protected from unauthorized entrance.

**454.1.5.3 Materials**. The equipment enclosure, area or room floor shall be of concrete or other nonabsorbent material having a smooth slip-resistant finish and shall have positive drainage, including a sump pump if necessary. Ancillary equipment, such as a heater, not contained in an equipment enclosure or room shall necessitate an equipment area as described above.

**454.1.5.4 Ventilation.** Equipment rooms shall have either forced draft or cross ventilation. All below-grade equipment rooms shall have a stairway access with forced draft ventilation or a fully louvered door and powered intake within 6 inches (152 mm) of the floor. Where stairway access is not necessary to carry heavy items into the below grade room or vault, a "ship's ladder" may be used if specified by the design engineer who must consider anticipated workload including equipment removal; and the ladder slope, tread height and width; and construction material of the ladder.

**454.1.5.5 Access.** The opening to an equipment room or area shall be a minimum 3 feet by 6 feet (914 mm by 1829 mm) and shall provide easy access to the equipment.

**454.1.5.6 Size.** The size of the equipment enclosure, room or area shall provide working space to perform routine operations. Clearance shall be provided for all equipment as prescribed by the manufacturer to allow normal maintenance operation and removal without disturbing other piping or equipment. In rooms with fixed ceilings, the minimum height shall be 7 feet (2137 mm).

**454.1.5.7 Lighting.** Equipment rooms or areas shall be lighted to provide 30 footcandles (300 lux) of illumination at floor level.

**454.1.5.8 Storage**. Equipment enclosures, rooms or areas shall not be used for storage of chemicals emitting corrosive fumes or for storage of other items to the extent that entrance to the room for inspection or operation of the equipment is impaired.

**454.1.5.9 Hose bibbs.** A hose bibb with vacuum breaker shall be located in the equipment room or area.

**454.1.6 Plumbing systems.**

**454.1.6.1 Sanitary facilities.** Swimming pools with a bathing load of 20 persons or less may utilize a unisex restroom. Pools with bathing loads of 40 persons or less may utilize two unisex restrooms or meet the requirements of Table 454.1.6.1. Unisex restrooms shall meet all the requirements for materials, drainage and signage as indicated in Sections 454.1.6.1.1 through 454.1.6.1.4. Each shall include a water closet, a diaper change table, a urinal and a lavatory. Pools with a bathing load larger than 40 persons shall provide separate sanitary facilities labeled for each sex. The entry doors of all restrooms shall be located within a 200-foot (60 960 mm) walking distance of the nearest water's edge of each pool served by the facilities.

**Exception:** Where a swimming pool serves only a designated group of residential dwelling units and not the general public, poolside sanitary facilities are not required if all living units are within a 200-foot (60 960 mm) horizontal radius of the nearest water's edge, are not over three stories in height unless serviced by an elevator, and are each equipped with private sanitary facilities.

**454.1.6.1.1 Required fixtures**. Fixtures shall be provided as indicated on Table 454.1.6.1. The fixture count on this chart is deemed to be adequate for the pool and pool deck area that is up to three times the area of the pool surface provided. When multiple fixture sets are required and separate facilities are provided for each sex, the fixtures used in ancillary family-style restrooms can be used to meet the requirements of this section.

One diaper changing table shall be provided at each restroom. Diaper changing tables are not required at restrooms where all pools served are restricted to adult use only. Swim diapers are recommended for use by children that are not toilet trained. Persons that are ill with diarrhea cannot enter the pool.

**Exception:** When a public swimming pool meets all of the following conditions the following shall apply:

1.   the pool serves only a designated group of dwelling units,

2.   the pool is not for the use of the general public, and

3.   a building provides sanitary facilities;

The fixture requirement for the building shall be determined and if it exceeds the requirement in Table 454.1.6.1 then the building requirement shall regulate the fixture count, otherwise the fixture count shall be based on the requirement for the pool. Under no circumstances shall the fixture counts be cumulative.

**TABLE 454.1.6.1**

**PUBLIC SWIMMING POOL—REQUIRED FIXTURE COUNT**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SIZE OF POOL** | **MEN'S RESTROOM** | | | | **WOMEN'S RESTROOM** | |
| **Urinals** | **WC** | | **Lavatory** | **WC** | **Lavatory** |
| 0 - 2,500 sq. ft. | 1 | 1 | | 1 | 1 | 1 |
| 2,501 - 5,000 sq. ft. | 2 | 1 | | 1 | 5 | 1 |
| 5,001 - 7,500 sq. ft. | 2 | 2 | | 2 | 6 | 2 |
| 7,501 - 10,000 sq. ft. | 3 | 2 | | 3 | 8 | 3 |
| For SI: 1 square foot = 0.0929 m2. | | | |

An additional set of fixtures shall be provided in the men's restroom for every 7,500 square feet or major fraction thereof for pools greater than 10,000 square feet.

Women's restrooms shall have a ratio of three to two water closets provided for women as the combined total of water closets and urinals provided for men.

Lavatory counts shall be equal.

**454.1.6.1.2 Outside access**. Outside access to facilities shall be provided for bathers at outdoor pools. Where the restrooms are located within an adjacent building and the restroom doors do not open to the outside, the restroom doors shall be within 50 feet (15 240 mm) of the building's exterior door. If the restrooms are not visible from any portion of the pool deck, signs shall be posted showing directions to the facilities. Directions shall be legible from any portion of the pool deck; letters shall be a minimum of 1 inch (25 mm) high.

***Change Section 454.1.6.1.3 to read as shown***

**454.1.6.1.3 Sanitary facility floors.** Floors of sanitary facilities shall be constructed of concrete or other nonabsorbent materials, shall have a smooth, slip-resistant finish, and shall slope to floor drains. Carpets, duckboards and footbaths are prohibited. The intersection between the floor and walls shall be ~~covered~~ coved where either floor or wall is not made of waterproof materials such as tile or vinyl.

**454.1.6.1.4 Hose bibb.** A hose bibb with vacuum breaker shall be provided in or within 25 feet (7620 mm) of each restroom to allow for ease of cleaning.

***Change Section 454.1.6.2 to read as shown***

**454.1.6.2 Rinse shower.** A minimum of one rinse shower shall be provided on the pool deck of all outdoor pools within the perimeter of the fence ~~20 feet (60 960 mm) of the nearest pool water's edge~~.

**454.1.6.3 Cross-connection prevention.** An atmospheric break or approved back flow prevention device shall be provided in each pool water supply line that is connected to a public water supply. Vacuum breakers shall be installed on all hose bibbs.

**454.1.6.4 Plastic pipes.** Plastic pipe subject to a period of prolonged sunlight exposure shall be coated to protect it from ultraviolet light degradation.

**454.1.6.5 Recirculation and treatment systems.**

**454.1.6.5.1 Equipment testing.** Recirculation and treatment equipment such as filters, recessed automatic surface skimmers, ionizers, ozone generators, disinfection feeders and chlorine generators shall be tested and approved using the NSF/ANSI Standard 50, Circulation System Components and Related Materials for Swimming Pool, Spas/Hot Tubs, dated April 2007, which is incorporated by reference.

**454.1.6.5.2 Volume**. The recirculation system shall be designed to provide a minimum of four turnovers of the pool volume per day. Pools that are less than 1,000 square feet (93 m3) at health clubs shall be required to provide eight turnovers per day.

**454.1.6.5.3 System design**. The design pattern of recirculation flow shall be 100 percent through the main drain piping and 100 percent through the perimeter overflow system or 60 percent through the skimmer system.

**454.1.6.5.3.1 Perimeter overflow gutters.** Thelip of the gutter shall be uniformly level with a maximum tolerance of 1/4 inch (6 mm) between the high and low areas. The bottom of the gutter shall be level or slope to the drains. The spacing between drains shall not exceed 10 feet (3048 mm) for 2-inch (51 mm) drains or 15 feet (4572 mm) for 21/2-inch (64 mm) drains, unless hydraulically justified by the design engineer. Gutters may be eliminated along pool edges for no more than 15 feet (4572 mm) and this shall not exceed 10 percent of the perimeter (at least 90 percent of the perimeter shall be guttered). In areas where gutters are eliminated, handholds shall be provided within 9 inches (229 mm) of the water surface. Handhold design shall be approved by the jurisdictional building department prior to construction.

**454.1.6.5.3.1.1** Either recessed type or open type gutters shall be used. Special designs can be approved provided they are within limits of sound engineering practice. Recessed type gutters shall be at least 4 inches (102 mm) deep and 4 inches (102 mm) wide. No part of the recessed gutter shall be visible from a position directly above the gutter sighting vertically down the edge of the deck or curb. Open-type gutters shall be at least 6 inches (150 mm) deep and 12 inches (305 mm) wide. The gutter shall slope 2 inches (51 mm), +/-1/4 inch (+/-6 mm), from the lip to the drains. The gutter drains shall be located at the deepest part of the gutter.

**454.1.6.5.3.1.2** All gutter systems shall discharge into a collector tank.

**454.1.6.5.3.1.3** The gutter lip shall be tiled with a minimum of 2-inch (51 mm) tile on the pool wall, each a minimum size of 1 inch (25 mm) on all sides. The back vertical wall of the gutter shall be tiled with glazed tile.

**Exception:** Stainless steel gutter systems when it can be shown that the surfaces at the waterline and back of the gutter are easily cleanable.

**454.1.6.5.3.2 Recessed automatic surface skimmers.** Recessed automatic surface skimmers may be utilized when the pool water surface area is 1,000 square feet (93 m3) or less excluding offset stairs and swimouts and the width of the pool is not over 20 feet (6096 mm).

**454.1.6.5.3.2.1 Volume.** The recessed automatic surface skimmer piping system shall be designed to carry 60 percent of the pool total design flow rate with each skimmer carrying a minimum 30 gpm (2 L/s). One skimmer for every 400 square feet (37 m2) or fraction thereof of pool water surface area shall be provided.

**454.1.6.5.3.2.2 Location.** Prevailing wind direction and the pool outline shall be considered by the designer in the selection of skimmer locations. The location of skimmers shall be such that the interference of adjacent inlets and skimmers is minimized. Recessed automatic surface skimmers shall be installed so that there is no protrusion into the pool water area. The deck or curb shall provide for a handhold around the entire pool perimeter and shall not be located more than 9 inches (229 mm) above the mid point of the opening of the skimmer.

**454.1.6.5.3.2.3 Equalizers.** Recessed automatic surface skimmers shall be installed with an equalizer valve and an equalizer line when the skimmer piping system is connected directly to pump suction. If installed, the equalizer valve shall be a spring loaded vertical check valve which will not allow direct suction on the equalizer line. Float valves are prohibited. The equalizer line inlet shall be installed at least 1 foot (305 mm) below the normal pool water level and the equalizer line inlet shall be protected by an ASME/ANSI A112.19.8 compliant cover/grate. The equalizer line shall be sized to handle the expected flow with a 2-inch (51 mm) minimum line size.

**454.1.6.5.3.2.4 Wall-inlet fitting**. A wall-inlet fitting shall be provided directly across from each skimmer.

**454.1.6.5.3.2.5 Waterline tile.** A minimum 6-inch (152 mm) water line tile shall be provided on all pools with automatic skimmer systems, each a minimum size of 1 inch (25 mm) on all sides. Glazed tile that is smooth and easily cleanable shall be utilized.

**454.1.6.5.4 Pumps.** If the pump or suction piping is located above the water level of the pool, the pump shall be self-priming. Pumps that take suction prior to filtration shall be equipped with a hair and lint strainer. The recirculation pump shall be selected to provide the required recirculation flow against a minimum total dynamic head of 60 feet (18,288 mm) unless hydraulically justified by the design engineer. Vacuum D.E. filter system pumps shall provide at least 50 feet (15,240 mm) of total dynamic head. Should the total dynamic head required not be appropriate for a given project, the design engineer shall provide an alternative.

**454.1.6.5.5 Filters.** Filters sized to handle the required recirculation flow shall be provided.

**454.1.6.5.5.1 Filter capacities.** The maximum filtration rate in gallons per minute per square foot of filter area shall be: 15 [20 if so approved using the procedure stated in Section 454.1.6.5.1 for high rate sand filters, 3 for rapid sand filters, 0.375 for pleated cartridge filters and 2 for Diatomaceous Earth (D.E.) type filters].

**454.1.6.5.5.2 Filter appurtenances.**

**454.1.6.5.5.2.1 Pressure filter systems**. Pressure filter systems shall be equipped with an air relief valve, influent and effluent pressure gauges with minimum face size of 2 inches (51 mm) reading 0-60 psi (0-414 kPa), and a sight glass when a backwash line is required.

**454.1.6.5.5.2.2 Vacuum filter systems.** Vacuum filter systems shall be equipped with a vacuum gauge which has a 2-inch (51 mm) face and reads from 0-30 inches of mercury.

**454.1.6.5.5.2.3 D.E. systems**. A precoat pot or collector tank shall be provided for D.E.-type systems.

**454.1.6.5.5.3 Filter tanks and elements.** The filter area shall be determined on the basis of effective filtering surfaces with no allowance given for areas of impaired filtration, such as broad supports, folds, or portions which may bridge. D.E.-type filter elements shall have a minimum 1-inch (25 mm) clear spacing between elements up to a 4 square foot (0.4 m2) effective area. The spacing between filter elements shall increase 1/8 inch (3 mm) for each additional square foot of filter area or fraction thereof above an effective filter area of 4 square feet (0.4 m2). All cartridges used in public pool filters shall be permanently marked with the manufacturer's name, pore size and area in square feet of filter material. All cartridges with end caps shall have the permanent markings on one end cap. Vacuum filter tanks shall have coved intersections between the wall and the floor and the tank floor shall slope to the filter tank drain. The D.E.-type filter tank and elements shall be installed such that the recirculation flow draw down does not expose the elements to the atmosphere whenever only the main drain valve is open or only the surface overflow gutter system valve is open.

**454.1.6.5.6 Piping.** All plastic pipe used in the recirculation system shall be imprinted with the manufacturer's name and the NSF-pw logo for potable water applications. Size, schedule and type of pipe shall be included on the drawings. Plastic pipe subject to a period of prolonged sunlight exposure shall be coated to protect it from ultraviolet light degradation.

**454.1.6.5.7 Valves.** Return lines, main drain lines, and surface overflow system lines, shall each have proportioning valves.

**454.1.6.5.8 Flow velocity.** Pressure piping shall not exceed 10 feet per second (2038 mm/s), except that precoat lines with higher velocities may be used when necessary for agitation purposes. The flow velocity in suction piping shall not exceed 6 feet per second (1829 mm/s) except that flow velocities up to 10 feet per second (3048 mm/s) in filter assembly headers will be acceptable. Main drain systems and surface overflow systems which discharge to collector tanks shall be sized with a maximum flow velocity of 3 feet per second (914 mm/s). The filter and vacuuming system shall have the necessary valves and piping to allow filtering to pool, vacuuming to waste, vacuuming to filter, complete drainage of the filter tank, backwashing for sand and pressure D.E.-type filters and precoat recirculation for D.E.-type filters.

**454.1.6.5.9 Inlets.** All inlets shall be adjustable with wall type inlets being directionally adjustable and floor type inlets having a means of flow adjustment. Floor inlets shall be designed and installed such that they do not protrude above the pool floor and all inlets shall be designed and installed so as not to constitute sharp edges or protrusions hazardous to pool bathers. Floor inlets for vinyl liner and fiberglass pools, shall be smooth with no sharp edges, and shall not extend more than 3/8 inches (9.5 mm) above the pool floor. Wall inlets shall be installed a minimum of 12 inches (305 mm) below the normal operating water level unless precluded by the pool depth or intended for a specific acceptable purpose.

**454.1.6.5.9.1** Pools 30 feet (9144 mm) in width or less, with wall inlets only shall have enough inlets such that the inlet spacing does not exceed 20 feet (6096 mm) based on the pool water perimeter.

**454.1.6.5.9.2** Pools 30 feet (9144 mm) in width or less with floor inlets only shall have a number of inlets provided such that the spacing between adjacent inlets does not exceed 20 feet (6096 mm) and the spacing between inlets and adjacent walls does not exceed 10 feet (3048 mm).

**454.1.6.5.9.3** A combination of wall and floor inlets may be used in pools 30 feet (9144 mm) in width or less only if requirements of Section 454.1.6.5.9.1 or Section 454.1.6.5.9.2 are fully met.

**454.1.6.5.9.4** Pools greater than 30 feet (9144 mm) in width shall have either floor inlets only, or a combination of floor inlets and wall inlets. Pools with floor inlets only shall have a number of floor inlets provided such that the spacing between adjacent inlets does not exceed 20 feet (6096 mm) and the spacing between inlets and an adjacent wall does not exceed 10 feet (3048 mm).

**454.1.6.5.9.5** Pools greater than 30 feet (9144 mm) in width with a combination of wall and floor inlets shall have the number of wall inlets such that the maximum spacing between the wall inlets is 20 feet (6096 mm) and floor inlets are provided for the pool water area beyond a 15 feet (4572 mm) perpendicular distance from all walls. The number of floor inlets shall be such that the spacing between adjacent inlets does not exceed 20 feet (6096 mm) and the distance from a floor inlet and an adjacent wall does not exceed 25 feet (7620 mm). Floor inlets shall be designed and installed such that they do not protrude more than 5/8 inch (16 mm) above the pool floor and all inlets shall be designed and installed so as not to constitute sharp edges or protrusions hazardous to pool bathers.

**454.1.6.5.9.6** The flow rate through each inlet shall not exceed 20 gpm (1 L/s).

**454.1.6.5.10 Main drain outlets**. All pools shall be provided with an outlet at the deepest point.

**454.1.6.5.10.1** The depth at the outlet shall not deviate more than 3 inches (76 mm) from the side wall.

***Change Section 454.1.6.5.10.1 to read as shown:***

**454.1.6.5.10.2** Outlets shall be covered by a secured grating which requires the use of a tool to remove and whose open area is such that the maximum velocity of water passing through the openings does not exceed 11/2 feet per second (457 mm/s) at 100 percent of the design recirculation flow. Main drain covers/grates shall comply with the requirements of ANSI/APSP 16 ~~ASME/ANSI A112.19.8-2007, or any successor standard~~, and the water velocity of this section.

**454.1.6.5.10.3** Multiple outlets, equally spaced from the pool side walls and from each other, shall be installed in pools where the deep portion of the pool is greater than 30 feet (9144 mm) in width.

**454.1.6.5.10.4** If the area is subject to high ground water, the pool shall be designed to withstand hydraulic uplift or shall be provided with hydrostatic relief devices.

**454.1.6.5.10.5** The main drain outlet shall be connected to a collector tank. The capacity of the collector tank shall be at least 1 minute of the recirculated flow unless justified by the design engineer. Vacuum filter tanks are considered collector tanks.

**454.1.6.5.11** **Water makeup control.** An automatic and manual water makeup control shall be provided to maintain the water level at the lip of the overflow gutter or at the mouth of the recessed automatic surface skimmers and shall discharge through an air gap into a fill pipe or collector tank. Over the rim fill spouts are prohibited.

***Change Section 454.1.6.5.12 to read as shown:***

**454.1.6.5.12 Cleaning system.**  A portable or plumbed in vacuum cleaning system shall be provided. All vacuum pumps shall be equipped with hair and lint strainers. When the system is plumbed in, the vacuum fittings shall be located to allow cleaning the pool with a 50-foot (15240 mm) maximum length of hose. Vacuum fittings shall be mounted ~~approximately~~ no more than 15 inches (381 mm) below the water level, flush with the pool walls, and shall be provided with a spring loaded safety cover ~~or flush plug cover~~ which shall be in place at all times when the pool is not being vacuumed. Bag-type cleaners, which operate as ejectors on potable water supply pressure, shall be protected by a vacuum breaker. Cleaning devices shall not be used while the pool is open to bathers.

**454.1.6.5.13 Rate of flow indicators.** A rate of flow indicator, reading in gpm, shall be installed on the return line. The rate of flow indicator shall be properly sized for the design flow rate and shall be capable of measuring from one-half to at least one-and-one-half times the design flow rate. The clearances upstream and downstream from the rate of flow indicator shall comply with manufacturer's installation specifications.

**454.1.6.5.14 Heaters**. Pool heaters shall comply with nationally recognized standards acceptable to the jurisdictional building department and to the design engineer. Pools equipped with heaters shall have a fixed thermometer mounted in the pool recirculation line downstream from the heater outlet. Thermometers mounted on heater outlets do not meet this requirement. A sketch of any proposed heater installation including valves, thermometer, pipe sizes, and material specifications shall be included in the application for permit prior to installation. Piping and influent, effluent and bypass valves which allow isolation or removal of the heater from the system shall be provided. materials used in solar and other heaters shall be nontoxic and acceptable for use with potable water. Heaters shall not prevent the attainment of the required turnover rate.

**454.1.6.5.15 Pool waste water disposal**. Pool waste water shall be discharged through an air gap; disposal shall be to sanitary sewers, storm sewers, drainfields, or by other means, in accordance with local requirements including obtaining all necessary permits. Disposal of water from pools using D.E. powder shall be accomplished through separation tanks which are equipped with air bleed valves, bottom drain lines, and isolation valves, or through a settling tank with final disposal being acceptable to local authorities. D.E. separator tanks shall have a capacity as rated by the manufacturer, equal to the square footage of the filter system. All lines shall be sized to handle the expected flow. There shall not be a direct physical connection between any drain from a pool or recirculation system and a sewer line.

**454.1.6.5.16 Addition of chemicals.** Disinfection and ph adjustment shall be added to the pool recirculation flow using automatic feeders meeting the requirement of ANSI/NSF 50-2007. All chemicals shall be fed into the return line after the pump, heater and filters unless the feeder was designed by the manufacturer and approved by the NSF to feed to the collector tank or to the suction side of the pump.

**454.1.6.5.16.1 Gas chlorination**. When gas chlorination is utilized, the chlorinator shall be capable of continuously feeding a chlorine dosage of 6 mg/L to the recirculated flow of the filtration system. The application point for chlorine shall be located in the return line downstream of the filter, recirculation pump, heater, and flow meter, and as far as possible from the pool.

**454.1.6.5.16.1.1** Gas chlorinators shall be located in above-grade rooms and in areas which are inaccessible to unauthorized persons.

**454.1.6.5.16.1.1.1** Chlorine rooms shall have: continuous forced draft ventilation capable of a minimum of one air change per minute with an exhaust at floor level to the outside, a minimum of 30 footcandles (300 lux) of illumination with the switch located outside and the door shall open out and shall not be located adjacent to the filter room entrance or the pool deck. A shatterproof gas-tight inspection window shall be provided.

**454.1.6.5.16.1.1.2** Chlorine areas shall have a roof and shall be enclosed by a chain-link type fence at least 6 feet (1829 mm) high to allow ventilation and prevent vandalism.

**454.1.6.5.16.1.2** When booster pumps are used with the chlorinator, the pump shall use recirculated pool water supplied via the recirculation filtration system. The booster pump shall be electrically interlocked with the recirculation pump to prevent the feeding of chlorine when the recirculation pump is not operating.

**454.1.6.5.16.1.3** A means of weighing chlorine containers shall be provided. When 150-pound (68 kg) cylinders are used, platform type scales shall be provided and shall be capable of weighing a minimum of two full cylinders at one time. The elevation of the scale platform shall be within 2 inches (51 mm) of the adjacent floor level, and the facilities shall be constructed to allow easy placement of full cylinders on the scales.

**454.1.6.5.16.2** **Hypohalogenation and electrolytic chlorine generators**. The hypohalogenation type feeder and electrolytic chlorine generators shall be adjustable from 0 to full range. A rate of flow indicator is required on erosion type feeders. The feeders shall be capable of continuously feeding a dosage of 6 mg/L to the minimum required turnover flow rate of the filtration systems. Solution feeders shall be capable of feeding the above dosage using a 10-percent sodium hypochlorite solution, or 5-percent calcium hypochlorite solution, whichever disinfectant is to be utilized at this facility. To prevent the disinfectant from siphoning or feeding directly into the pool or pool piping under any type failure of the recirculation equipment, an electrical interlock with the recirculation pump shall be incorporated into the system for electrically operated feeders. The minimum size of the solution reservoirs shall be at least 50 percent of the maximum daily capacity of the feeder. The solution reservoirs shall be marked to indicate contents.

***Change Section 454.1.6.5.16.3 to read as shown:***

**454.1.6.5.16.3 Feeders for PH adjustment.** Feeders for PH adjustment shall be provided on all pools. ~~, except spa pools of less than 100 square feet (9 m2) of pool water surface area and pools utilizing erosion type chlorinators feeding chlorinated isocyanurates.~~ PH adjustment feeders shall be positive displacement type, shall be adjustable from 0 to full range, and shall have an electrical interlock with the circulation pump to prevent discharge when the recirculation pump is not operating. When soda ash is used for PH adjustment, the maximum concentration of soda ash solution to be fed shall not exceed 1/2-pound (.2 kg) soda ash per gallon of water. Feeders for soda ash shall be capable of feeding a minimum of 3 gallons (11 L) of the above soda ash solution per pound of gas chlorination capacity. The minimum size of the solution reservoirs shall not be less than 50 percent of the maximum daily capacity of the feeder. The solution reservoirs shall be marked to indicate the type of contents.

**454.1.6.5.16.4 Ozone generating equipment.** Ozone generating equipment may be used for supplemental water treatment on public swimming pools subject to the conditions of this section.

**454.1.6.5.16.4.1** Ozone generating equipment electrical components and wiring shall comply with the requirements of the Chapter 27 of the *Florida Building Code, Building* and the manufacturer shall provide a certificate of conformance. The process equipment shall be provided with an effective means to alert the user when a component of this equipment is not operating.

**454.1.6.5.16.4.2** Ozone generating equipment shall meet the NSF/ANSI Standard 50.

**454.1.6.5.16.4.3** The concentration of ozone in the return line to the pool shall not exceed 0.1 mg/L.

***Change Section 454.1.6.5.16.4.4 to read as shown***

**454.1.6.5.16.4.4** The injection point for ozone generating equipment shall be located in the pool return line after the filtration and heating equipment, prior to the halogen injection point, and as far as possible from the nearest pool return inlet with a minimum distance of 4 feet (1219 mm). Injection methods shall include a mixer, contact chamber, or other means of efficiently mixing the ozone with the recirculated water. The injection and mixing equipment shall not prevent the attainment of the required turnover rate of the recirculation system. Ozone generating equipment shall be equipped with a check valve between the generator and the injection point. Ozone generating equipment shall be equipped with an air flow ~~m~~ meter and a means to control the flow. The generator shall be electrically interlocked with the recirculation pump to prevent the feeding of ozone when the recirculation pump is not operating. A flow sensor controller can also be used to turn off the feeder when flow is sensed.

**454.1.6.5.16.4.5** **Ventilation requirements.** Ozone generating equipment shall be installed in equipment rooms with either forced draft or cross draft ventilation. Below-grade equipment rooms with ozone generators shall have forced draft ventilation and all equipment rooms with forced draft ventilation shall have the fan control switch located outside the equipment room door. The exhaust fan intake for forced draft ventilation and at least one vent grille for cross draft ventilation shall be located at floor level.

**454.1.6.5.16.4.6** A self-contained breathing apparatus designed and rated by its manufacturer for use in ozone contaminated air shall be provided when ozone generator installations are capable of exceeding the maximum pool water ozone contact concentration of 0.1 milligram per liter. The self-contained breathing apparatus shall be available at all times and shall be used at times when the maintenance or service personnel have determined that the equipment room ozone concentration exceeds 10 mg/L. Ozone generator installations which require the self-contained breathing apparatus shall also be provided with Draeger-type detector tube equipment which is capable of detecting ozone levels of 10 mg/L and greater.

**Exception**: In lieu of the self-contained breathing apparatus an ozone detector capable of detecting 1 mg/L may be used. Said detector shall be capable of stopping the production of ozone, venting the room and sounding an alarm once ozone is detected.

**454.1.6.5.16.5** Ionization units may be used as supplemental water treatment on public pools subject to the condition of this section.

**454.1.6.5.16.5.1** Ionization equipment and electrical components and wiring shall comply with the requirements of Chapter 27 of the *Florida Building Code, Building* and the manufacturer shall provide a certification of conformance.

**454.1.6.5.16.5.2** Ionization equipment shall meet the NSF/ANSI Standard 50,

*Circulation System Components and Related Materials for Swimming Pools, Spas/Hot Tubs*, or equivalent, shall meet UL standards and shall be electrically interlocked with recirculation pump.

**454.1.6.5.16.6** Ultraviolet (UV) light disinfectant equipment may be used as supplemental water treatment on public pools (and additional treatment on IWF's) subject to the conditions of this paragraph and manufacturer's specifications. UV is encouraged to be used to eliminate or reduce chlorine-resistant pathogens, especially the protozoan Cryptosporidium.

1. UV equipment and electrical components and wiring shall comply with the requirements of the *National Electrical Code* and the manufacturer shall provide a certification of conformance to the jurisdictional building department.

2. UV equipment shall meet UL standards and shall be electrically interlocked with recirculation pump(s) on all pools and with feature pumps(s) on an IWF such that when the UV equipment fails to produce the required dosage as measured by an automated sensor, the feature pump(s) are disabled so the water features do not operate.

3. UV equipment shall be validated by a capable party that it delivers the required and predicted UV dose at the validated flow, lamp power and water UV transmittance conditions, and has complied with all professional practices summarized in the *USEPA Ultraviolet Disinfectant Guidance Manual dated November 2006*, which is publication number EPA 815-R-06-007 available from the department at http://www.floridashealth.org/Environment/water/swim/index.html or at http://www.epa.gov/safewater/disinfection/lt2/pdfs/guide\_lt2\_uvguidance.pdf.

4. UV equipment shall constantly produce a validated dosage of at least 40 mJ/cm2 (milliJoules per square centimeter) at the end of lamp life.

5. The UV equipment shall not be located in a side stream flow and shall be located to treat all water returning to the pool or water features.

***Change Sections 454.6.5.17 and 454.6.5.18 to read as shown:***

**454.1.6.5.17** Water features such as waterfalls or fountains in pools may use up to 20% of the return water from the filter system, however all waters used in the feature shall not be counted toward attaining the designed turnover rate. Return piping system shall be designed and capable of handling the additional feature flow when the feature is turned off. Features that require more than 20% of the flow rate shall be supplied by an additional pump that drafts from a suitable collector tank. All water features that utilize water from the pool shall be designed to return the water to the pool. Spray features mounted in the pool deck shall be flush with the pool deck and shall be designed with the safety of the pool patron in mind.

**454.1.6.5.18 Chemical quality**. Only NSF-60 approved chemicals shall be provided. ~~Chemicals used in controlling the quality of the pool water shall be tested and approved using the National Sanitation Foundation (NSF-ANSI) Standard 60-2005, Drinking Water Treatment Chemicals-Health Effects dated September, 2005, which is incorporated by reference and shall be compatible with other accepted chemicals used in pools. The following parameters shall be adhered to for pool water treatment:~~

~~1. pH – 7.2 to 7.8.~~

~~2. Disinfection – Free chlorine residual shall be 1 milligram per liter (mg/L) to 10 mg/L, inclusive, in conventional swimming pools and 2 mg/L to 10 mg/L, inclusive, in all other type pools such as spa-type pools and interactive water fountains; bromine residual shall be 1.5 mg/L to 10 mg/L, inclusive, in conventional swimming pools and 3 mg/L to 10 mg/L, inclusive, in all other type pools. Except that, the following maximum disinfectant levels shall apply to indoor conventional swimming pools: 5 mg/L free chlorine or 6 mg/L bromine.~~

~~3. When oxidation-reduction potential controllers are required, the water potential shall be kept between 700 and 850 millivolts. Use of these units does not negate the manual daily testing requirement of subsection 64E-9.004(13), F.A.C.~~

~~4. Cyanuric acid – 100 mg/L maximum in pools, with 40 mg/L as the recommended maximum, and 40 mg/L maximum in spa pools~~

~~5. Quaternary ammonium – 5 mg/L maximum~~

~~6. Copper – 1 mg/L maximum~~

~~7. Silver – 0.1 mg/L maximum~~

**454.1.7 Wading pools.**

**454.1.7.1 General.** Wading pools shall meet the requirements of Sections 454.1.1 through 454.1.6.5, unless otherwise indicated. Wading pools and associated piping shall not be physically connected to any other swimming pools and have no minimum width dimensions requirements.

***Change Section 454.1.7.2 to read as shown***

**454.1.7.2 Depths.** Wading pools shall have a maximum depth of 2 feet (610 mm). The depth at the perimeter of the pool shall be uniform and shall not exceed 12 inches (305 mm). However, where jurisdictional building department-approved zero depth entry designs are used, this uniform depth requirement must be met only on the remainder of the pool outside the zero depth entry portion. The pool floor shall not be more than 12 inches (305 mm) below the deck unless steps and handrails are provided. Depth and "NO DIVING" markers are not required on wading pools.

**454.1.7.3 Recirculation.** Wading pools shall have a minimum of one turnover every hour. Lines from main drains shall discharge into a collector tank.

**454.1.7.3.1** Skimmer equalizer lines when required shall be plumbed into the main drain installed in the pool floor with a grate covering.

**454.1.7.3.2** The grate cover shall be sized so as not to allow the flow to exceed 1 ½ feet per second (457 mm/s) when the equalizer line is operating.

**454.1.7.4 Inlets.** Wading pools with 20 feet (6096 mm) or less of perimeter shall have a minimum of two equally spaced adjustable inlets.

**454.1.7.5 Emergency drainage**. All wading pools shall have drainage to waste without a cross connection through a quick opening valve to facilitate emptying the wading pool should accidental bowel or other discharge occur.

***Change Section 454.1.7.6 to read as shown***

**454.1.7.6 Vacuuming.** Wading pools with 200 square feet (19 mm) or more of pool water surface area shall have provisions for vacuuming through the skimmer, a portable vacuum system or an alternative approved method that does not involve a direct suction port in the pool.

**454.1.7.7 Wading pool decks.** When adjacent to swimming pools, wading pools shall be separated from the swimming pool by barrier or a fence of a minimum of 48 inches (1219 mm) in height with self-latching and self-closing gates. When adjacent to areas less than one foot (305 mm) deep of zero depth entry pools, the fence or effective barrier is required if the water edges are less than 40 feet (12 192 mm) apart. Wading pools shall have a minimum 10-foot (3048 mm) wide deck around at least 50 percent of their perimeter with the remainder of the perimeter deck being at least 4 feet (1219 mm) wide. There shall be at least 10 feet (3048 mm) between adjacent swimming pools and wading pools.

***Change Sections 454.1.7.8 and 454.1.7.9 to read as shown***

**454.1.7.8 Lighting.** Wading pools are exempt from underwater lighting requirements but shall have ~~overhead~~ lighting installed for night use~~.~~ **of 10 foot-candles if indoors or 6 foot-candles for outdoor night use. Such illumination shall be provided over the pool water surface and the pool deck surface**

**454.1.7.9** Automated Oxidation Reduction Potential (ORP) and pH controllers with sensing probes shall be provided to assist in maintaining proper disinfection and pH levels.

**454.1.8 Spa pools.**

**454.1.8.1 General.** Spa pools shall meet the requirements of Sections 454.1.1 through 454.1.6.5, unless specifically indicated otherwise.

**454.1.8.2 Color, pattern, finish**. The color, pattern or finish of the pool interior shall not obscure the existence or presence of objects or surfaces within the pool.

**454.1.8.3 Water depths**. Spa type pools shall have a minimum water depth of 2 1/2 feet (762 mm) and a maximum water depth of 4 feet (1219 mm), except that swim spa pools may have a maximum water depth of 5 feet (1524 mm). Depth markers and "NO DIVING" markers are not required on spa-type pools with 200 square feet (19 m2) or less of water surface area.

**454.1.8.4 Steps and handrails**. Steps or ladders shall be provided and shall be located to provide adequate entrance to and exit from the pool. The number of sets of steps or ladders required shall be on the basis of one for each 75 feet (22 860 mm), or major fraction thereof, of pool perimeter. Step sets for spa type pools with more than 200 square feet of pool water surface area shall comply with Section 454.1.2.5. Step sets for spa-type pools with 200 square feet (19 m2) or less of pool water surface area shall comply with the following: Step treads shall have a minimum width of 10 inches (254 mm) for a minimum continuous tread length of 12 inches (305 mm). Step riser heights shall not exceed 12 inches (305 mm). Intermediate treads and risers between the top and bottom treads and risers shall be uniform in width and height, respectively. Contrasting markings on the leading edges of the submerged benches and the intersections of the treads and risers are required to be installed in accordance with Section 454.1.2.5.

**454.1.8.4.1** Handrails shall be provided for all sets of steps and shall be anchored in the bottom step and in the deck. Handrails shall be located to provide maximum access to the steps and handrails shall extend 28 inches (711 mm) above the pool deck.

**454.1.8.4.2** Where "figure 4" handrails are used, they shall be anchored in the deck and shall extend laterally to any point vertically above the bottom step. Handrails shall be located to provide maximum access to the steps and handrails shall extend 28 inches (711 mm) above the pool deck.

**454.1.8.5 Decks.** Decks shall have a minimum 4-foot-wide (1219 mm) unobstructed width around the entire pool perimeter except that pools of less than 120 square feet (11 m2) of pool water surface area shall have a minimum 4-foot-wide (1219 mm) unobstructed continuous deck around a minimum of 50 percent of the pool perimeter. Decks less than 4 feet (1219 mm) wide shall have barriers to prevent their use. Decks shall not be more than 10 inches (254 mm) below the top of the pool. For pools of 120 square feet (11 m2) or greater, 10 percent of the deck along the pool perimeter may be obstructed.

**454.1.8.6 Therapy or jet systems.**

**454.1.8.6.1** The return lines of spa-type therapy or jet systems shall be independent of the recirculation-filtration and heating systems.

**454.1.8.6.2** Therapy or jet pumps shall take suction from the collector tank. Collector tank sizing shall take this additional gallonage into consideration.

**454.1.8.7 Filtration system inlets.** Spa-type pools with less than 20 feet (6096 mm) of perimeter shall have a minimum of two equally spaced adjustable inlets.

**454.1.8.8 Filtration recirculation.** Spa-type pools shall have a minimum of one turnover every 30 minutes. The piping, fittings, and hydraulic requirements shall be in accordance with Section 454.1.6.5. All recirculation lines to and from the pool shall be individually valved with proportional flow-type valves in order to control the recirculation flow.

**454.1.8.9 Vacuuming.** Spa-type pools of over 200 square feet (19 m2) of pool water surface area shall have provisions for vacuuming.

**454.1.8.10 Combination spas/pools.** When spa pools are part of a conventional swimming pool, the spa pool area shall be offset from the main pool area with the same water depth as the main pool area. The spa pool shall meet all the spa pool requirements of this chapter, and the deck area at the spa shall be protected by connected 30-inch-high (762 mm) stanchions. The deck perimeter at the offset spa area shall not exceed 15 percent of the entire swimming pool perimeter. All benches shall have contrasting markings on the leading edges of the intersection of the bench seats. If tile is used, it shall be slip resistant.

***Change Section 454.1.8.11 to read as shown***

**454.1.8.11** **Portable and wooden spa pools.** Portable and wooden-type spa pools are prohibited.

**454.1.8.12 Automated Controllers.** Automated Oxidation Reduction Potential (ORP) and pH controllers with sensing probes shall be installed ~~provided~~ on spa pools to assist in maintaining proper disinfection and pH levels.

**454.1.8.13** In addition to the requirements of 424.1.2.3.5 spa pool signs installed shall include the following:

1. Maximum water temperature 104º F.

2. Children under twelve must have adult supervision.

3. Pregnant women, small children, people with health problems and people using alcohol, narcotics or other drugs that cause drowsiness should not use spa pools without first consulting a doctor.

4. Maximum use 15 minutes.

**454.1.8.14** A clock shall be visible from the spa pool to assist the patron in meeting the requirement 4 of section 454.1.8.13 above.

**454.1.8.15** If a spa is equipped with an emergency cut-off or kill switch, it shall include provisions for a minimum 80 decibel audible alarm near the spa to sound continuously until deactivated when such device is triggered ~~shall be incorporated. This is to alert pool patrons and operators of a potential public health situation or to indicate that the spa filtration and treatment system may be off.~~ The following additional rule sign shall be installed to be visible by the spa which reads “ALARM INDICATES SPA PUMPS OFF. DO NOT USE SPA WHEN ALARM SOUNDS UNTIL ADVISED OTHERWISE.”

**454.1.9** **Water recreation attractions and specialized pools.**

**454.1.9.1 General.** Water recreation attraction projects shall be designed and constructed within the limits of sound engineering practice. In addition to the requirements of this section, compliance is required with Sections 454.1.1 through 454.1.6.5 of this chapter depending upon the pool design and function. Additionally, all pools listed in this section shall have a 2-hour turnover rate unless otherwise noted.

**454.1.9.2 Water slides.**

**454.1.9.2.1 Water slide plunge pool.** Plunge pools shall be constructed of concrete or other structurally rigid impervious materials with a nontoxic, smooth and slip resistant finish. The plunge pool design shall meet the criteria of Sections 454.1.9.2.1.1 through 454.1.9.2.1.6.

**454.1.9.2.1.1 Plunge pool water depth.** The minimum plunge pool operating water depth at the slide flume terminus shall be 3 feet (914 mm). This depth shall be maintained for a minimum distance of 10 feet (3048 mm) in front of the slide terminus from which point the plunge pool floor may have a constant upward slope to allow a minimum water depth of 2 feet (51 mm) at the base of the steps. The floor slope shall not exceed 1 in 10. The plunge pool water depth shall be commensurate with safety and the ease of exit from the plunge pool.

**454.1.9.2.1.2 Plunge pool dimension.** The plunge pool dimension between any slide flume exit or terminus and the opposite side of the plunge pool shall be a minimum of 20 feet (6096 mm) excluding steps.

**454.1.9.2.1.3 Slide flume terminus.**

**454.1.9.2.1.3.1** The slide flume terminus shall be designed by the design engineer who can demonstrate to the jurisdictional building department's satisfaction that riders will be adequately slowed prior to discharge so as to prevent injury or harm to the rider upon impact with the plunge pool water. The slide terminus shall be flush with the pool wall and located at or below the pool water level.

**454.1.9.2.1.3.2** The minimum distance between any plunge pool side wall and the outer edge of any slide terminus shall be 5 feet (1524 mm). The minimum distance between adjacent slide flumes shall be 6 feet (18 288 mm).

**454.1.9.2.1.3.3** A minimum length of slide flume of 10 feet (3048 mm) shall be perpendicular to the plunge pool wall at the exit end of the flumes.

**454.1.9.2.1.4 Plunge pool main drains.** The plunge pool shall have a minimum of one main drain with separate piping and valve to the filtration system collector tank. The velocity through the openings of the main drain grate shall not exceed 1 1/2 feet per second (457 mm/s) at the design flow rate of the recirculation pump. The main drain piping shall be sized to handle 100 percent of the design flow rate of the filtration system with a maximum flow velocity of 3 feet (914 mm) per second.

**454.1.9.2.1.5 Plunge pool floor slope.** The plunge pool floor shall slope to the main drains and the slope shall not exceed 1 in 10.

**454.1.9.2.1.6 Plunge pool decks.**

**454.1.9.2.1.6.1 Width.** The minimum width of plunge pool decks along the exit side shall be 10 feet (3048 mm).

**454.1.9.2.1.6.2 Slopes.** All plunge pool decks shall slope to the plunge pool or pump reservoir or to deck drains which discharge to waste, or other acceptable means. All slopes shall be between 2- and 4-percent grade.

**454.1.9.2.2 Run out lanes.**

**454.1.9.2.2.1** Run out lanes may be utilized in lieu of a plunge pool system, provided they are constructed to the slide manufacturers specifications and are approved by the design engineer of record.

**454.1.9.2.2.2** Five-foot-wide (1524 mm) walkways shall be provided adjacent to run out lanes.

**454.1.9.2.2.3** Minimum water level indicator markings shall be provided on both sides of the run out trough to ensure adequate water for the safe slowing of pool patrons.

**454.1.9.2.2.4** Water park personnel shall be provided at the top of the slides and at the run out.

**454.1.9.2.3 Pump reservoirs.** Pump reservoirs shall be made of concrete or other impervious material with a smooth slip-resistant finish. Pump reservoirs shall be for the slide pump intakes, but where properly sized may also be used as a collector tank for the filter system. Pump reservoir designs shall meet the criteria of Sections 454.1.9.2.3.1 through 454.1.9.2.3.5.

***Change Section 454.1.9.2.3.1 to read as shown***

**454.1.9.2.3.1 Pump reservoir volume.** The minimum reservoir volume shall be equal to ~~2~~ 3 minutes of the combined flow rate in gallons per minute of all filter and slide pumps.

**454.1.9.2.3.2 Pump reservoir security.** Pump reservoirs shall be accessible only to authorized individuals.

**454.1.9.2.3.3 Pump reservoir maintenance accessibility**. Access decks shall be provided for the reservoir such that all areas are accessible for vacuuming, skimming, and maintenance. The decks shall have a minimum width of 3 feet (914 mm) and shall have a minimum slope of 3:10 away from the reservoir.

**454.1.9.2.3.4 Pump reservoir slide pump intakes.** The slide pump intakes shall be located in the pump reservoir and shall be designed to allow cleaning without danger of operator entrapment.

**454.1.9.2.3.5 Pump reservoir main drains.** The pump reservoir shall have a minimum of one main drain with separate piping and valve to the filtration system collector tank and the velocity through the openings of the main drain grates shall not exceed 1 ½ feet per second (457 mm/s) at the design flow rate of the filtration system pump. The main drain piping shall be sized to handle 100 percent of design flow rate of the filtration system pump with a maximum flow velocity of 3 feet per second (914 mm/s).

**454.1.9.2.3.6** The pump reservoir shall be fed by main drains within the plunge pool itself (either in the floor or side wall). They shall have the maximum flow velocity of 1 ½ feet per second (457 mm/s) through the main drain grating and 3 feet per second (3962 mm/s) through the reservoir piping.

**454.1.9.2.4 Slide pump check valves.** Slide pumps shall have check valves on all discharge lines.

**454.1.9.2.5 Perimeter overflow gutters or skimmers**. Plunge pools and pump reservoirs shall have perimeter overflow gutter system or skimmer which shall be an integral part of the filtration system.

**454.1.9.2.5.1 Perimeter overflow gutter systems.** Perimeter overflow gutter systems shall meet the requirements of Section 454.1.6.5.3.1 except that gutters are not required directly under slide flumes or along the weirs which separate plunge pools and pump reservoirs.

**454.1.9.2.5.2 Surface skimmers**. Surface skimmers may be used in lieu of perimeter overflow gutters and shall be appropriately spaced and located according to the structural design. Unless an overflow gutter system is used, surface skimmers shall be provided in the plunge pool and in the pump reservoir and the skimmer system shall be designed to carry 60 percent of the filtration system design flow rate with each skimmer carrying a minimum 30 gpm (2 L/s). All surface skimmers shall meet the requirements for NSF commercial approval as set forth in NSF/ANSI Standard 50, Circulation System Components and Related Materials for Swimming Pools, Spas/Hot Tubs, which is incorporated by reference in these rules, including an equalizer valve in the skimmer and an equalizer line to the pool wall on systems with direct connection to pump suction.

**454.1.9.2.6 Water slide recirculation–filtration equipment.**

***Change Section 454.1.9.2.6.1 to read as shown***

**454.1.9.2.6.1 Recirculation rate.** The recirculation-filtration system of water slides shall recirculate and filter a water volume equal to the total water volume of the facility in a period of ~~3~~ 2 hours or less.

**454.1.9.2.6.2 Filter areas**. Minimum filter area requirements shall be twice the filter areas specified for the recirculation rates stipulated in Section 454.1.6.5.5.1. The filtration system shall be capable of returning the pool water turbidity to 5/10 NTU within 8 hours or less after peak bather load.

**454.1.9.2.6.3 Hair and lint strainer.** Any filtration system pump which takes suction directly from the plunge pool and reservoir shall have a minimum 8-inch (208 mm) diameter hair and lint strainer on the suction side of the pump.

**454.1.9.2.7 Disinfection**. The disinfection equipment shall be capable of feeding 12 mg/L of halogen to the continuous recirculation flow of the filtration system.

**454.1.9.2.8** Slide design and construction is the responsibility of a professional engineer licensed in Florida and the applicant.

**454.1.9.2.9** A lockable gate shall be provided at the stair or ladder entrance to the slide.

**454.1.9.2.10** Upon construction completion, a professional engineer licensed in Florida shall certify that the slide was constructed in accordance with the manufacturer's specifications and is structurally sound.

**454.1.9.3 Water activity pools.**

***Change Section 454.1.9.3.1 to read as shown***

**454.1.9.3.1** Water activity pools shall be designed and constructed within the limits of sound engineering practice. ~~The design engineer may consult with the department prior to preparation and submission of engineering plans and specifications for water activity pools.~~

**454.1.9.3.2** Water activity pools shall be constructed of concrete or other structurally rigid impervious materials with a nontoxic, smooth and slip-resistant finish. These pools shall be of such shape and design as to be operated and maintained in a safe and sanitary manner.

**454.1.9.3.3** The recirculation-filtration system of water activity pools shall achieve a minimum of one turnover every 2 hours for water activity pools over 2 feet (610 mm) deep, and in 1 hour for these pools that are 2 feet (610 mm) deep or less.

**454.1.9.3.4** Those portions of the activity pool where the water depth will not allow for the proper installation of underwater lighting, shall be provided with 6 foot-candles (60 lux) of lighting on the deck and water surface.

**454.1.9.3.5** Fence requirements shall be in accordance with Section 454.1.7.7.

**454.1.9.3.6** Play features with an overhead clearance of less than 4 feet (1219 mm) shall be blocked or barricaded to preclude children becoming entrapped.

***Change Section 454.1.9.3.7 to read as shown***

**454.1.9.3.7** In addition to the requirements of 454.1.2.3.5, all water activity pool signs installed shall have the following added in one inch letters:

Do not swallow the pool water, it is recirculated.

Do not use pool if you are ill with diarrhea.

**454.1.9.4 Wave pools.**

**454.1.9.4.1** Wave pools shall be designed and constructed within the limits of sound engineering practice.

**454.1.9.4.2** Wave pools shall be constructed of concrete or other impervious materials with a smooth slip-resistant finish. These pools shall be of such shape and design as to be operated and maintained in a safe and sanitary manner.

**454.1.9.4.3** The recirculation-filtration system of wave pools shall be capable of a minimum of one turnover every 3 hours.

**454.1.9.4.4** Floors shall be sloped in accordance with the manufacturer's or design engineer's specifications; however, they shall not exceed the slope limits of Section 454.1.2.2.3.

**454.1.9.5 River rides.**

**454.1.9.5.1** River rides shall be constructed within the limits of sound engineering practice.

**454.1.9.5.2** River rides shall be constructed on concrete or other impervious materials with a nontoxic, smooth and slip-resistant finish. These rides shall be of such shape and design as to be operated in a safe and sanitary manner.

**454.1.9.5.3** The recirculation-filtration system of the river ride shall be capable of a minimum of one turnover every 3 hours.

**454.1.9.5.4** The maximum water depth of the river ride shall not exceed 3 feet (914 mm) unless justified to the jurisdictional building department's satisfaction by the design engineer.

**454.1.9.5.5** Decking shall be provided at the entrance and exit points as necessary to provide safe patron access but shall not be smaller than 10 feet (3048 mm) in width and length. Additional decking along the ride course is not required except that decking shall be required at lifeguard locations and emergency exit points.

**454.1.9.5.6** Access and exit shall be provided at the start and end of the ride and additional exit locations shall be located along the ride course as necessary to provide for the safety of the patrons.

Propulsion jets shall be installed in the walls of the river ride. In the alternative, propulsion jets may be installed in the floor if they are covered by a grate that will inhibit entrapment or injury of the pool patrons' feet or limbs.

**454.1.9.6 Zero depth entry pools.**

**454.1.9.6.1** Zero depth entry pools shall have a continuous floor slope from the water edge to the deep end.

**454.1.9.6.2** The deck level perimeter overflow system with grate shall be provided at the water’s edge across the entire zero depth portion of the pool.

***Change Section 454.1.9.6.3 to read as shown***

**454.1.9.6.3** The pool deck may slope toward the pool for no more than ~~5~~ 7 (~~1524~~ 2133 mm), as measured from the overflow system grate outward. Beyond this area the deck shall slope away from the pool in accordance with Section 454.1.2.2.3.

**454.1.9.6.4** "No-Entry, Shallow Water" signs shall be provided along the pool wall edge where the water depth is less than 3 feet (914 mm) deep. No-entry signs shall be slip-resistant, shall have 4-inch-high (102 mm) letters, shall be located within 2 feet (610 mm) of the pool edge and shall be spaced no more than 15 feet (4572 mm) apart.

**454.1.9.6.5** Additional inlets shall be provided in areas of less than 18 inches (457 mm) deep. The numbers and location shall be such as to double the flow rate into this area.

**454.1.9.6.6** The recirculation-filtration system shall be of a minimum of one turnover every 2 hours in the area of the pool that is 3 feet (914 mm) deep or less. In the remainder of the pool where the depth is greater than 3 feet (914 mm), the system shall have a maximum 6 hour turnover rate. The design plans submitted by the applicant shall provide the volume of water in the pool area of 3 feet (914 mm) depth and less, the volume of water in the pool area greater than 3 feet (914 mm) in depth and the total volume in the pool for determination of minimum circulation flow. The volume calculations shall provide verification that the correct volume of water is used to determine the minimum flow at the 2-hour and the 6-hour flow requirements.

**454.1.9.6.7** Those portions of the zero depth entry pool, where the water depth will not allow for the proper installation of underwater lighting, shall be provided with 6 foot-candles (60 lux) of lighting on the deck and the water.

**454.1.9.6.8** Play structures in a zero depth entry area [in depth 0-3 feet (0 to 914 mm)] may be within 15 feet (4572 mm) of the pool walls, but shall comply with sound engineering requirements for the safety of pool patrons.

**454.1.9.7 Special purpose pools.**

**454.1.9.7.1 General**. Special purpose pool projects may deviate from the requirements of other sections of these rules provided the design and construction are within the limits of sound engineering practice. Only those deviations necessary to accommodate the special usage shall be allowed and all other aspects of the pool shall comply with the requirements of this section and with Section 454.1.2.

**454.1.9.7.2** A special purpose pool may incorporate ledges which do not overhang into the pool.

**454.1.9.8 Interactive water features (IWFs).**

***Change Section 454.1.9.8.1 to read as shown***

**454.1.9.8.1** Waters discharged from all fountain or spray features shall not pond on the feature floor but shall flow by gravity through a main drain fitting to a below or collection system which discharges to a collector tank. The minimum size of the collector tank shall be equal to the volume of ~~2~~  3 minutes of the combined flow of all feature pumps and the filter pump. Smaller tanks may be utilized if hydraulically justified by the design engineer. Adequate access shall be provided to the sump or collector tank. Stairs or a ladder shall be provided as needed to ensure safe entry into the tank.

***Change Section 454.1.9.8.2 to read as shown***

**454.1.9.8.2** Reserved. ~~An automatic skimmer system shall be provided in the collector tank. A variable height skimmer may be used or a custom surface skimmer device may be substituted if deemed appropriate by both the design engineer and the department.~~

***Change Section 454.1.9.8.3 to read as shown***

**454.1.9.8.3** Chemical feeders shall be in accordance with Section 454.1.6.5; except that the disinfection feeder shall be capable of feeding 12 ppm of free chlorine to the ~~filter return piping~~ pressure side of the recirculation system or the collector tank (based upon a hypothetical 30-minute turnover of the contained volume within the system). Automated Oxidation Reduction Potential (ORP) and pH controllers with sensing probes shall be installed ~~provided~~ to assist in maintaining proper disinfection and pH levels.

**454.1.9.8.4** If night operation is proposed, 6 footcandles (60 lux) of light shall be provided on the pool deck and the water feature area. Lighting that may be exposed to the feature pool water shall not exceed 15 volts, shall be installed in accordance with manufacturer's specifications and be approved for such use by UL or NSF.

**454.1.9.8.5** All electrical work shall comply with Chapter 27 of the *Florida Building Code, Building*.

**454.1.9.8.6 Hydraulics.**

***Change Section 454.1.9.8.6.1 to read as shown***

**454.1.9.8.6.1** The filter system shall filter and chemically treat all water that is returned to the spray features. The filter system shall draft from the collector tank and return filtered ~~and treated~~ water directly to the spray features. Excess water not required by the spray features shall be returned to the collector tank.

**454.1.9.8.6.2** The water feature pump shall draft from the collector tank.

**454.1.9.8.6.3** Alternatively, the contained volume of the system may be filtered and chemically treated based upon a 30-minute turnover of the contained volume with 100 percent returned to the collector tank by manifold piping. If this alternative is chosen, all water returned to the spray feature(s) must also be treated with an Ultraviolet (UV) light disinfection equipment to accomplish protozoan destruction in accordance with sound engineering and the requirements of Section 454.1.6.5.16.6. This alternative must have the ability to feed 6 mg/L free chlorine to the feature water as it is returned to the spray feature. The UV disinfection equipment shall be electrically interconnected such that whenever it fails to produce the required UV dosage, the water spray features pump(s) and flow will be immediately stopped.

**454.1.9.8.6.4** The flow rate through the feature nozzles of the water features shall be such as not to harm the patrons and shall not exceed 20 feet per second (6096 mm/s) unless justified by the design engineer and by the fountain system manufacturer.

**454.1.9.8.6.5** An automatic water level controller shall be provided.

**454.1.9.8.6.6** An overfill waste line with air gap shall be provided.

**454.1.9.8.6.7** A means of vacuuming and completely draining the tank(s) shall be provided.

**454.1.9.8.6.8** Where the filter system described in Section 454.1.9.8.6.1 is utilized, a second filter system and disinfection system shall be provided to treat the water in the collector tank when the feature/filter pump is not in operation. Said system shall be capable of filtering the total volume of water in the collector tank in 30 minutes and the disinfection system shall be capable of providing 12 mg/L of disinfectant to this flow rate.

**454.1.9.8.6.9** IWFs shall be fenced in the same fashion as wading pools as noted in Section 454.1.7.7. Where the IWF is at least 50 feet (15,240 mm) from all other pools and is not designed to have any standing water, fencing requirements should be carefully considered by the applicant to control usage, but are not required by rule.

**454.1.9.8.6.10** A minimum 4-foot-wide (1219 mm) wet deck area shall be provided around all IWFs. The wet deck shall meet the requirements of Section 454.1.2.2.3; however, up to 50 percent of the perimeter may be obstructed.

**454.1.9.8.6.11** IWFs shall be constructed of concrete or other impervious and structurally rigid material.

**454.1.9.8.6.12** Floor slopes of an IWF shall be a maximum 1 foot (305 mm) vertical in 10 feet (3048 mm) horizontal and a minimum of 1 foot (305 mm) vertical in 50 feet (15 240 mm) horizontal.

***Change Section 454.1.9.8.6.13 to read as shown***

**454.1.9.8.6.13** In addition to the requirements of 454.1.2.3.5, all IWF pool rule signs installed shall have the following added in one inch letters:

Do not swallow the fountain water, it is recirculated.

Do not use fountain if you are ill with diarrhea.

**454.1.9.8.7** Water theme parks shall meet all other aspects of these rules for the features provided.

**454.1.9.8.7.1** Rules and regulations for water theme parks shall be posted in minimum 1-inch (305 mm) letters at each entrance to the park and shall contain the following:

1. No food, drink, glass or animals in or on the pool decks.

2. Park operating hours \_\_A.M. to \_\_P.M.

3. Shower before entering.

4. Do not swallow the pool water.

**454.1.9.8.7.2** Showers shall be provided at or near the entrance (queue line) to a water recreation attraction.

**454.1.9.8.7.3** Water theme parks are exempt from the fencing requirements of Section 454.1.3.1.9, except that pools designed for small children shall be fenced when located within 50 feet (15 240 mm) of a pool with water depths of 3 feet (914 mm) or more.

**454.1.9.8.7.4** Sanitary facilities within a water theme park shall be as near to the water recreation attractions as prudent to ensure patron use, but not over 200 feet (60 960 mm) walking distance from any exit of a water attraction.

**454.1.10 Modifications.**

**454.1.10.1 Modifications.** Modifications include nonequivalent changes or additions to the recirculation system, treatment equipment, physical structure or appurtenances. Replacement of the pool or spa shell is considered to be construction of a new facility and shall be processed as such. The installation of new decking is not considered a modification if it is installed in conformance with Section 454.1.3.1, and deck markings are upgraded in accordance with Section 454.1.2.3. Resurfacing the pool interior to original nontoxic, slip-resistant and smooth specifications or equivalent replacement of equipment are not considered modifications.

**454.1.10.2** The painting of pools shall not be considered a modification provided the following conditions are met:

1. Only paints designated by the manufacturer as pool paints are used.

2. All step stripes, slope break markers and safety line, and depth and NO DIVING markings shall be provided to comply with the applicable provision(s) this section.

**454.1.10.3** The installation of copper or copper/silver ionization units and ozone generators capable of producing less than a pool water ozone contact concentration of 0.1 milligrams per liter (mg/L) shall not be considered a pool modification provided compliance when the following is met:

1. The ionization or ozone generator unit complies with paragraph 64E-9.007(16)(e), *Florida Administrative Code.*

2. The manufacturer provides one set of signed and sealed engineering drawings indicating the following:

a. The unit does not interfere with the design flow rate.

b. The unit and the typical installation meet the requirements of the *National Electrical Code.*

c. A copper test kit and information regarding the maximum allowed copper and silver level and the minimum required chlorine level shall be available to the pool owner.

d. The unit shall meet the requirements of the NSF/ANSI Standard 50.

3. At least 7 days before the time of installation, the installer will provide a photocopy of the above drawings and a letter of intent identifying the pool on which the unit is to be installed.

4. Upon completion of the installation, a professional engineer or electrician licensed in the state of Florida shall provide a letter to the county health department, indicating the unit was properly installed in accordance with the typical drawings, the *National Electrical Code* and local codes.

***Change Section 454.2 to read as shown***

**454.2 Private swimming pools.**

**454.2.1 Definitions–general.**

**454.2.1.1** **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.

**454.2.1.2** **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 Webster's *Ninth New Collegiate Dictionary*, as revised.

**454.2.2 Definitions.**

**ABOVE-GROUND/ON-GROUND 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 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.

**DIATOIMTE (DIATOAMCEOUS EARTH).** A type of filter aid.

**DIATOIMTE TYPE FILTER.** A filter designed to be used with filter aid.

**DIRECT ACCESS FROM THE HOME.** 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 (.3 L/s) per square foot.

**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.

**MESH SAFETY BARRIER.** A combination of materials, including fabric, posts, and other hardware to form a barrier around a swimming pool.

**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.

**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 (.3 L/s) per square foot.

**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.** Situated on the premises of a detached one- 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 watertight 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.** Any person under the age of 6 years.

**454.2.3 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.*

**454.2.4 Approvals.**

**454.2.4.1 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.

**454.2.4.2 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.

**454.2.4.2.1 Flood hazard areas.**  Private swimming pools installed in flood hazard areas established in Section 1612.3 shall comply with Section 1612.

**454.2.4.3 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.

**454.2.5 Alternate materials and methods of construction.**

**454.2.5.1 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.

**454.2.5.2 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.

**454.2.6 Private swimming pools.**

***Change Section 454.2.6.1 to read as shown***

**454.2.6.1 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~~NSPI~~ 5, ANSI/APSP/ICC~~NSPI~~ 6, and ANSI/APSP 7.

**454.2.6.2 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.

**454.2.6.3 Water velocity.** Pool piping shall be designed so the water velocity will not exceed 10 feet per second (mm/s) for pressure piping and 8 feet per second (mm/s) for suction piping, except that the water velocity shall not exceed 8 feet per second (3048 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.

**454.2.6.4 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.

**454.2.6.5 Piping installation.** All piping materials shall be installed in strict accordance with the manufacturer's installation standards.

**Exception:** Primer and glue on exposed above-ground piping not required to be colored.

**454.2.6.6** Entrapment protection for suction outlets shall be installed in accordance with requirements of ANSI/APSP 7.

**454.2.7 Pumps.**

**454.2.7.1 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.

**454.2.7.2 Installation**. Pumps shall be installed in accordance with manufacturer recommendations.

**454.2.7.3 Capacity.** Pumps shall have design capacity at the following heads.

1.       Pressure diatomaceous earth–At least 60 feet (18 288 mm).

2.       Vacuum D.E.–20-inch (508 mm) vacuum on the suction side and 40 feet (1219 mm) total head.

3.       Rapid sand–At least 45 feet (13 716 mm).

4.       High rate sand–At least 60 feet (18 288 mm).

**454.2.7.4 Materials.** Pump impellers, shafts, wear rings and other working parts shall be of corrosion-resistant materials.

**454.2.8 Valves.**

**454.2.8.1 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.

**454.2.8.2 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.

**454.2.8.3 Check valves.** Where check valves are installed they shall be of the swing, spring or vertical check patterns.

**454.2.8.4 Combination valves.** Combination valves shall be installed per the manufacturer's installation instructions.

**454.2.9 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.

**454.2.10 Waste water disposal.**

**454.2.10.1 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.

**454.2.10.2 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.

**454.2.10.3 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.

**454.2.11 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.

**454.2.12 Tests.**

**454.2.12.1 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 psi (241 kPa) for 15 minutes.

**Exception:** Circulating pumps need not be tested as required in this section.

**454.2.12.2 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.

**454.2.13 Drain piping.**

**454.2.13.1 Slope to discharge**. Drain piping serving gravity overflow gutter drains and deck drains shall be installed to provide continuous grade to point of discharge.

**454.2.13.2 Joints and connections.** Joints and connections shall be made as required by the *Florida Building Code, Plumbing.*

**454.2.14 Water heating equipment.**

**454.2.14.1 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.

**454.2.14.2 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.

**454.2.14.3 Pit drainage.** When the heater is installed in a pit, the pit shall be provided with approved drainage facilities.

**454.2.14.4 Connections**. All water heating equipment shall be installed with flanges or union connection adjacent to the heater.

**454.2.14.5 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.

**454.2.15 Gas piping.** Gas piping shall comply with the *Florida Building Code, Fuel Gas*.

**454.2.16 Electrical.** Electrical wiring and equipment shall comply with Chapter 27 of the *Florida Building Code, Building*.

**454.2.17 Residential swimming barrier requirement.** Residential swimming pools shall comply with Sections 454.2.17.1 through 454.2.17.3.

**Exception:** A swimming pool with an approved safety pool cover complying with ASTM F 1346.

**454.2.17.1 Outdoor swimming pools.** Outdoor swimming pools shall be provided with a barrier complying with Sections 454.2.17.1.1 through 454.2.17.1.14.

**454.2.17.1.1** 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).

**454.2.17.1.2** 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.

**454.2.17.1.3** Solid barriers which do not have openings shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.

**454.2.17.1.4** 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 1¾ inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1¾ inches (44 mm) in width.

**454.2.17.1.5** 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 1 ¾ inches (44 mm) in width.

**454.2.17.1.6** Maximum mesh size for chain link fences shall be a 2 ¼ inch (57 mm) square unless the fence is provided with slats fastened at the top or bottom which reduce the openings to no more than 1¾ inches (44 mm).

**454.2.17.1.7** Where the barrier is composed of diagonal members, the maximum opening formed by the diagonal members shall be no more than 1 ¾ inches (44 mm).

**454.2.17.1.8** Access gates, when provided, shall be self-closing and shall comply with the requirements of Sections 454.2.17.1.1 through 454.2.17.1.7 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.

**454.2.17.1.9** 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**.**

**454.2.17.1.10** Where an above-ground 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 454.2.17.1.1 through 454.2.17.1.9 and Sections 454.2.17.1.12 through 454.2.17.1.14. 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.

**454.2.17.1.11** Standard screen enclosures which meet the requirements of Section 454.2.17 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.

**454.2.17.1.12** 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.

**454.2.17.1.13** 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.

**424.2.17.1.14** 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.

**454.2.17.1.15** A mesh safety barrier meeting the requirements of Section 454.2.17 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 (24 kg) of horizontal force prior to breakage when measured at a 36 inch (914 mm) height above grade. Vertical posts of the child 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 1/4-inch (6.4 mm) round object could not 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 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 mesh safety barrier shall not be more than 1 inch (25 mm) above the deck or installed surface (grade).

**454.2.17.1.16 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.

**454.2.17.2** **Indoor swimming pools.** All walls surrounding indoor swimming pools shall comply with Section 454.2.17.1.9.

**454.2.17.3 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.

**454.2.18 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/ swim-outs in the deep end. Where manufactured diving equipment is to be used, benches or swim-outs 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, swimout or ladder may be used at all additional shallow ends in lieu of an additional set of steps.

**454.2.19 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.

**454.2.20 Filters.** Components shall have sufficient capacity to provide a complete turnover of pool water in 12 hours or less.

**454.2.20.1 Sand filters.**

**454.2.20.1.1 Approved types.** Rapid sand filters [flow up to 5 gpm per square foot (.3L/s)] shall be constructed in accordance with approved standards. Where high rate sand filters [flow in excess of 5 gpm per square foot (.3 L/s)] 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 (.8 L/s) or rapid sand filters or 15 gpm per square foot (.9 L/s) for high rate sand filters.

**454.2.20.1.2 Instructions**. Every filter system shall be provided with written operating instructions.

**454.2.20.1.3 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.

**454.2.20.2 Diatomite type filters.**

**454.2.20.2.1 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 (.13 L/s) of effective filter area.

**454.2.20.2.2 Filter aid.** Provision shall be made to introduce filter aid into the filter in such a way as to evenly precoat the filter septum.

**454.2.21 Pool fittings.**

**454.2.21.1 Approved type.** Pool fittings shall be of an approved type and design as to be appropriate for the specific application.

**454.2.21.2 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 gpm (94L/m) per skimmer.

**454.2.21.3 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.

**454.2.21.4 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).

**454.2.21.5 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).

**454.2.22 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.

**454.2.23 Accessibility and clearances.** Equipment shall be so installed as to provide ready accessibility for cleaning, operating, maintenance and servicing.

***Section 455 – Public Lodging Establishments***

***Add Florida specific requirements from Section 425 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 455**

**PUBLIC LODGING ESTABLISHMENTS**

**455.1 Scope.** Public lodging establishments shall comply with the following design and construction standards.

**Note:** Other administrative and programmatic provisions may apply. See Department of Business and Professional Regulations (DBPR) Rules 61C-1 and 61C-3, *Florida Administrative Code* and Chapter 509, *Florida Statutes*.

**455.2 Definitions.**

**PUBLIC LODGING ESTABLISHMENT**. See Section 509.013, *Florida Statutes.*

**455.3 General sanitation and safety requirements.** The following general requirements and standards shall be met by all public lodging establishments:

**455.3.1 Water, plumbing and waste.** Except as specifically provided in this code, standards for water, plumbing and waste shall be governed by Chapter 5 of 1999 Food Code and Chapter 509 Part I, *Florida Statutes*. For the purposes of this section, the term "food establishment" as referenced in the Food Code shall apply to all public lodging establishments as defined in Chapter 509, *Florida Statutes*.

**455.3.2 Public bathrooms.**

**455.3.2.1** Each public lodging establishment shall be provided with adequate and conveniently located bathroom facilities for its employees and guests in accordance with provisions of this section and the *Florida Building Code, Plumbing*. Public access to toilet facilities shall not be permitted through food preparation, storage, or ware washing areas. Bathroom fixtures shall be of readily cleanable sanitary design.

**455.3.2.2** Public bathrooms shall be completely enclosed and shall have tight-fitting, self-closing doors or have entrances and exits constructed in such a manner as to ensure privacy of occupants. Such doors shall not be left open except during cleaning or maintenance.

**455.3.2.3** Resort condominiums, nontransient establishments and resort dwellings are exempt from the provisions of this section.

**455.3.3 Vermin control.** Effective control measures shall be taken to protect against the entrance into the establishment, and the breeding or presence on the premises of rodents, flies, roaches and other vermin. All buildings shall be effectively rodentproofed. All windows used for ventilation must be screened, except when effective means of vermin control are used. Screening material shall not be less than 16 mesh to the inch or equivalent, tightfitting and free of breaks.

**455.3.4 Fire safety.** All fire safety, protection and prevention equipment must be installed, approved, maintained and used in accordance with Chapter 509, *Florida Statutes*, Chapter 69A-3 Fire Prevention-General Prevention Code*, Florida Administrative Codes.*

**455.3.4.1 Specialized smoke detectors.** Specialized smoke detectors for the deaf and hearing-impaired shall be made available upon request by guests in transient public lodging establishments without charge. Failure of the operator to inform any employee charged with registering guests of the location of such detector constitutes failure to make such detectors available.

**455.3.5 Electrical wiring.** To prevent fire or injury, defective electrical wiring shall be replaced and wiring shall be kept in good repair. Only a wall switch or approved pull cord shall be permitted in bathrooms. Electrical wiring shall be in accordance with the provisions of Chapter 27 of the *Florida Building Code, Building*.

**455.3.6 Heating and ventilation.** The heating and ventilation system shall be kept in good repair or be installed to maintain a minimum of 68°F (20°C) throughout the building.

**455.3.7 Gas appliances.** All appliances, including water heaters using gas, shall be properly vented as required by the F*lorida Building Code, Fuel Gas.*

**455.4 Sanitation and safety requirements.**

**455.4.1 Guest bathrooms.**

**455.4.1.1** Connecting bathrooms shall provide toilets with open-front seats. Guest and private bathrooms shall provide toilets. Guest, private, and connecting bathrooms shall provide lavatories and shower enclosures with hot and cold running water under pressure.

**455.4.1.2** Each transient public lodging establishment shall maintain one public bathroom with a minimum of a toilet, lavatory, and shower enclosure for each sex on every floor for every 15 guests rooming on that floor not having access to private or connecting bathrooms.

**455.4.2 Ice storage bins.** Ice storage bins shall be drained through an air gap in accordance with the provisions of the *Florida Building Code, Plumbing*.

**455.4.3 Locks.** A locking device shall be provided in accordance with the *Florida Fire Prevention Code*. Public lodging establishments as defined in rule 61C-1.002(4)(a), *Florida Statutes*, shall have at least one approved locking device which does not include a sliding chain or hook-and-eye type device, on all outside and connecting doors which cannot be opened by a nonmaster guest room key.

**Florida Specific Amendment**

***Section 456 – Public Food Service Establishments***

***Add Florida specific requirements from Section 426 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 456**

**PUBLIC FOOD SERVICE ESTABLISHMENTS**

**456.1 Scope.** Public food service establishments or food establishments shall comply with design and construction standards as described in the Food Code, Chapter 509 Part I or Chapter 500, *Florida Statutes*, as applicable.

**Note:** Other administrative and programmatic provisions may apply. See Department of Business and Professional Regulation (DBPR) Rule 61C-4, *Florida Administrative Code,* Chapter 500 and Chapter 509, *Florida Statutes*.

**456.2 Definitions.**

**FOOD ESTABLISHMENTS**. See Section 500.03, *Florida Statutes*.

**PUBLIC FOOD SERVICE ESTABLISHMENTS**. See Section 509.013, *Florida Statutes*.

**456.3 General sanitation and safety requirements.** The following general requirements and standards shall be met by all food service establishments:

**456.3.1 Water, plumbing, and waste.** Except as specifically provided in this section, standards for water, plumbing and waste shall be governed by Chapter 5, Food Code, herein adopted by reference.

**456.3.1.1** Grease interceptors shall be designed and installed in accordance with the *Florida Building Code, Plumbing.*

**456.3.2 Public bathrooms.**

**456.3.2.1** Food service establishment shall be provided with adequate and conveniently located bathroom facilities for its employees and guests in accordance with provisions of the *Florida Building Code, Plumbing*. Public access to toilet facilities shall not be permitted through food preparation, storage, or ware washing areas. Bathroom fixtures shall be of readily cleanable sanitary design.

**456.3.2.2** Public bathrooms shall be completely enclosed and shall have tight-fitting, self closing doors or, in public lodging establishments or bathrooms located outside a public food service, have entrances and exits constructed in such a manner as to ensure privacy of occupants.

**456.3.3 Vermin control.** Effective control measures shall be taken to protect against the entrance into the establishment, and the breeding or presence on the premises of rodents, flies, roaches and other vermin. All buildings shall be effectively rodentproofed. All windows used for ventilation must be screened, except when effective means of vermin control are used. Screening material shall not be less than 16 mesh to the inch or equivalent, tightfitting and free of breaks.

**456.3.4 Fire safety.** All fire safety, protection and prevention equipment must be installed, approved, maintained and used in accordance with Chapter 509, *Florida Statutes*, Chapter 69A-55, Uniform Fire Safety Standards for Public Food Service Establishments, FAC, and the *Florida Fire Prevention Code* as adopted by the State Fire Marshal.

**456.3.5 Electrical wiring.** To prevent fire or injury, defective electrical wiring shall be replaced and wiring shall be kept in good repair. Only a wall switch or approved pull cord shall be permitted in bathrooms. Electrical wiring shall be in accordance with the provisions of *Florida Building Code, Building*, Chapter 27.

**456.3.6 Gas appliances.**

**456.3.6.1** All appliances, including water heaters using gas, shall be properly vented in accordance with the *Florida Building Code, Fuel Gas*. All appliances shall have a nationally recognized testing laboratory seal such as AGA or UL seal.

**456.3.6.2** Heating appliances shall be properly sized in Btu input for room air space. Proper sizing of heating appliances shall be determined in accordance with the provisions of the *Florida Building Code, Fuel Gas*.

**456.4 Sanitation and safety requirements.**

**456.4.1 Bathroom facilities.** All bathrooms shall be of easy and convenient access to both patrons and employees and shall be located on the same floor of the premises served. For the purpose of this section, the same floor includes any intermediate levels between the floor and ceiling of any room or space not to exceed a vertical height of 8 feet (2438 mm). Public food service establishments whose occupancy is incidental to another occupancy may utilize public restrooms provided on the same floor. The travel distance may vary where adequate directional signs are provided and the number of fixtures is deemed satisfactory by the applicable plumbing authority. Each public food service establishment shall maintain a minimum of one public bathroom for each sex, properly designated, except as provided herein:

**456.4.1.1** Places serving food or drink on a take-out, carry-out or delivery basis only which provide no seating shall be required to provide a minimum of one bathroom accessible to the public.

**456.4.1.2** Arcades, malls, or flea markets containing public food service establishments which offer no seating within the public food service establishment may have centrally located bathroom facilities accessible to patrons of the establishments in the arcade, mall, or flea market provided such bathroom facilities are within 300 feet (91,440 mm) of each establishment.

**456.4.1.3** Public food service establishments located within theme parks and entertainment complexes may utilize centrally located bathroom facilities accessible to patrons of the establishments in the theme park or entertainment complex provided such bathroom facilities are reasonably accessible. For purposes of this section, reasonably accessible means within 300 feet (91,440 mm) of each establishment.

**456.4.1.4** Public food service establishments which seat 10 persons or less shall be required to provide a minimum of one bathroom accessible to the public.

**456.4.1.5** Public food service establishments located within a public lodging establishment shall be permitted to utilize public bathrooms located within the public lodging establishment, provided such bathrooms are available for use by the patrons of the public food service establishment during all hours of operation, are within 300 feet (91,440 mm) of the public food service establishment, and are located on the same floor as the public food service establishment. For purposes of this section, the same floor includes any intermediate levels between the floor and ceiling of any room or space without restriction as to vertical height.

***Section 457 – Mental Health Programs***

***Add Florida specific requirements from Section 427 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 457**

**MENTAL HEALTH PROGRAMS**

**457.1 Public mental health crisis stabilization units and short-term residential treatment programs.**

**457.1.1 Scope.** Crisis stabilization units and short-term residential treatment units shall comply with the design and construction standards in this section.

**Note:** Other administrative and programmatic provisions may apply. See Department of Children and Family Services (DCFS) Rule 65E-12, *Florida Administrative Code*, and Chapter 394, *Florida Statutes*.

**457.1.2 Definitions.**

**CRISIS STABILIZATION UNIT (CSU).** A state-supported mental health service or program and is a short-term alternative to inpatient psychiatric hospitalization and an integrated part of a designated public receiving facility under the authority of Chapter 394, *Florida Statutes*. A CSU provides brief intensive services for individuals who are presented as acutely mentally ill on a 24-hour-a-day, seven-day-a-week basis, under the licensing authority of the department of Children and Families and the Agency for Health Care Administration. The purpose of a CSU is emergency psychiatric reception, psychiatric examination, to stabilize and redirect people to the most appropriate and least restrictive treatment settings consistent with their needs.

**SHORT-TERM RESIDENTIAL TREATMENT PROGRAM (SRT).** A state-supported acute care 24-hour-a-day, seven-day-a-week residential alternative service, generally of 90 days or less, and which is an integrated part of a designated public receiving facility and receives state mental health funds under the authority of chapter 394, *Florida Statutes*. The purpose of an SRT is to provide less acute intensive short-term treatment to individuals who have previously been admitted to either a hospital or CSU and have been transferred to the SRT as being temporarily in need of a 24-hour-a-day structured therapeutic setting in a less restrictive, but longer-stay alternative to hospitalization.

**457.1.3 Facility standards for facilities licensed prior to or on July 14, 1993.**

**457.1.3.1 Building construction requirements.**

**457.1.3.1.1** Construction, additions, refurbishing, renovations, and alterations to existing facilities shall comply with the following codes and standards:

1. The building codes described in the *Florida Building Code*;

2. The fire codes contained in Chapter 69A-44, "Minimum Fire Safety Standards for Residential Alcohol and Drug Abuse Treatment and Prevention Programs, Mental Health Residential Treatment Facilities and Crisis Stabilization Units," *Florida Administrative Code,* as described in the NFPA 101, Chapters 18 and 19, Special Definitions, as adopted by the *Florida Fire Prevention Code*, as applicable to limited health care facilities, which is included by reference in Chapter 59A-3, *Florida Administrative Code.*

**457.1.3.2 Minimum physical plant requirements**. Each CSU and SRT shall conform to the requirements of Sections 457.1.3.2.1 through 457.1.3.2.12.

**457.1.3.2.1** In multiple occupancy bedrooms or sleeping areas there shall be a minimum of 60 square feet (6 m2) per bed and no less than a 30-inch (762 mm) separation between beds. Bedrooms shall be limited to a maximum of four occupants.

**457.1.3.2.2** The minimum size of a single occupant bedroom shall be 55 square feet (5 m2).

**457.1.3.2.3** Each CSU shall have at least one seclusion room and another room which may be used as a seclusion room. Each SRT shall have a seclusion room. Seclusion rooms shall be a minimum of 55 square feet (5 m2). If a restraint bed is utilized it shall have access around it and be bolted to the floor. Seclusion rooms shall minimally include a mattress. Ceilings shall be solid, and all lighting fixtures shall be tamperproof, and power receptacles are not permitted in the room.

**457.1.3.2.4** The facility shall have at least one water fountain readily accessible for the use of persons receiving services.

**457.1.3.2.5** The facility shall have a minimum ratio of one shower for each eight individuals and one toilet and lavatory for each six individuals. Individual shower stalls and dressing areas shall be provided. The use of gang showers is prohibited. Access to a bathroom shall not be through another person's room.

**457.1.3.2.6** The facility shall have a locked area for personal possessions being held for safekeeping. Individual shelves or other similar dividers shall be provided in the locked area for the storage of personal possessions. The facility shall have written policies and procedures to ensure reasonable access to personal possessions.

**457.1.3.2.7** Each facility shall have a fenced outside recreation area with a minimum fence height of no less than 6 feet (1829 mm) suitable for impeding elopements.

**457.1.3.2.8** External windows shall have security screens or equivalent protection.

**457.1.3.2.9** The facility shall provide an appropriate separate nontreatment area to serve as a general reception area with accommodations for such activities as receiving visitors. This reception area shall be separated from the treatment area by a locked doorway.

**457.1.3.2.10** When a CSU is collocated with another program, as provided for in Section 65E-12.106(23), *Florida Administrative Code*, the following minimum facility requirements shall be met.

Collocation means the operation of CSU and SRT, or CSU and substance abuse detoxification services from a common nurses' station without treatment system integration. It may result in the administration of those services by the same organization and the sharing of common services, such as housekeeping, maintenance and professional services.

1. A CSU shall be separated and secured by locked doors, used by persons receiving services, from the SRT and detoxification units.

2. Whenever a CSU is collocated with an SRT or substance abuse detoxification unit there shall be no compromise in CSU standards. In all instances, whenever there is a conflict between CSU rules and SRT, alcohol or drug abuse rules, the more restrictive rules shall apply.

**457.1.3.2.11** All CSUs shall be locked facilities and, to the maximum extent practical, provide a locked perimeter around a living unit and fenced exercise area within which individuals can reside 24 hours-a-day in an environment designed to minimize potential for injury. Where this is not possible, operational compensation shall be made as follows:

1. Each person receiving services shall be provided a minimum of 175 square feet (16 m2) of usable client space within the CSU. Useable client space is the sum, in gross square feet, of all rooms, interior wall to interior wall, that are part of a CSU and SRT facility. mechanical and electrical rooms, administrative and staff offices, screening areas, nurses' stations, visitor and reception areas, crawl space and attic space are excluded. Bedrooms shall be spacious and attractive, and activity rooms or space shall be provided.

2. CSU facilities shall be locked to provide reasonable control over access to and egress from the unit, recreational area, and emergency reception areas. When individuals are moved to other areas, the pathways shall also be locked or have adequate control provisions to prevent elopement. Such controlled passageways shall include access to the emergency reception area, unit proper, off unit doorways, and recreational areas.

3. All unit door locks shall employ a common key for rapid access in emergency situations with quick releasing or single-turn mechanisms.

**457.1.3.2.12** Food preparation areas for 13 or more persons shall comply with the provisions of Chapter 64E-11, *Florida Administrative Code*, "Food Hygiene."

**457.1.3.3 Health and sanitation.**

**457.1.3.3.1** Appropriate health and sanitation inspections shall be obtained before occupying any new physical facility or addition. A report of the most recent inspections must be on file and accessible to authorized individuals.

**457.1.3.3.2** Hot and cold running water under pressure shall be readily available in all washing, bathing and food preparation areas. Hot water in areas used by persons being served shall be at least 100°F (38°C) but not exceed 120°F (49°C).

**457.1.3.4 Seclusion room.** Each CSU shall have at least one seclusion room located in the CSU facility. Additional space shall be available that can be used either as a seclusion room or bedroom, as need dictates. Policies and procedures shall be developed on handling emergency situations that require seclusion. Each SRT shall have a seclusion room.

**457.1.4 Minimum construction standards for CSU and SRT facilities initially licensed after July 14, 1993.**

**457.1.4.1 Construction requirements.**

**457.1.4.1.1 New facility construction.** New facility construction and additions, refurbishing, renovations and alterations to existing facilities shall comply with the following codes and standards:

1. The building codes described in the *Florida Building Code*.

2. The fire codes contained in Chapter 69A-44, "Minimum Fire Safety Standards for Residential Alcohol and Drug Abuse Treatment and Prevention Programs, Mental Health Residential Treatment Facilities and Crisis Stabilization Units," *Florida Administrative Code*, as described in the NFPA 101, Chapters 12 and 13, "Special Definitions," as adopted by the *Florida Fire Prevention Code*, as applicable to limited health care facilities, which is included by reference in Chapter 59A-3, *Florida Administrative Code*.

3. The accessibility requirements of the *Florida Building Code, Accessibility.*

**457.1.4.1.2 Plumbing.** All plumbing shall comply with the requirements of the *Florida Building Code, Plumbing.*

**457.1.4.1.3 Inspections and certificate of occupancy.** Appropriate health and sanitation inspections and a certificate of occupancy shall be obtained before occupying any new facility or addition. A report of the most recent inspections must be on file and accessible to authorized individuals.

**457.1.4.1.4 Sprinklers**. No unsprinklered building classification as defined in the *Florida Building Code, Building*, is allowed. All facilities shall be protected throughout by an approved automatic sprinkler and smoke detection system to include a smoke detector in every bedroom. Provision shall be made for automatic emergency forces notification.

**457.1.4.1.5 Surge protection**. Surge protection in compliance with the *National Electric Code*, Article 280, as incorporated by reference in Chapter 27 of the *Florida Building Code, Building*, shall be installed to protect each service entrance equipment and have integral visual indication of surge protector failure. Additional surge protection shall be provided for all low-voltage and power connections to all electronic equipment and conductors entering or exiting the building and other life safety systems equipment such as fire alarm, telephone, and nurse call. Protection shall be in accordance with appropriate IEEE standards for the type of equipment being protected.

**457.1.4.2 Overall functional design.**

**457.1.4.2.1** The CSU or SRT shall be designed to provide a locked perimeter around a living unit and fenced exercise area within which individuals can reside 24 hours a day in an environment designed to minimize potential for injury. The CSU or SRT structure shall be single story ground level facility. These facilities shall have separate off-unit reception and administration areas which may also be locked. Service corridors and pathways to other nonunit activities shall not be through the locked CSU or SRT unit.

**457.1.4.2.2** The walls throughout all client areas of the CSU or SRT shall either be concrete block or a double layer of gypsum wallboard or 3/4-inch (19 mm) thick plaster on metal lath to minimize maintenance of the facility. The general architecture of the unit shall provide for optimal line-of-sight observation from the nurses' station throughout the unit, minimizing hidden spots and blind corners.

**457.1.4.2.3** The CSU or SRT shall be designed to create a pleasant functional therapeutic environment throughout, by the use of sunlight, colors, designs, textures, and furnishings. The design shall achieve a secure unit which looks more residential than institutional in its construction and furnishings, while incorporating substantial safety considerations throughout.

**457.1.4.2.4** The CSU or SRT shall be designed in order that the general unit be divided into a close observation area and a general observation area based upon the need for frequent physical proximity, singular observation of individuals, and lowered stimulation levels. These areas do not need physical separation; for example, they may be the left and right sides of the unit.

**457.1.4.2.4.1** **Close observation area.** This area shall include persons brought onto the CSU or SRT needing initial observation or restraints, individualized observation, and lowered stimulation levels, all of which require the frequent physical proximity of nurses. This area shall be directly adjacent to the primary unit doorway and nurses' station. The immediately adjacent rooms shall be used for single occupancy and restraint or seclusion. These rooms shall be remote from routine high activity areas and corridors.

**457.1.4.2.4.2 General observation area.** This shall include areas where persons routinely congregate or walk through such as multioccupant bedrooms, activity rooms, smoking areas, dining room and routine traffic corridors, or pathways. The dining and activity areas shall be directly observable, or under constant staff supervision, but may be a greater distance from the nurses' station.

**457.1.4.2.5** All areas of CSUs and SRTs shall be ventilated by central, ducted supply and return forced air systems. Toilets, bathrooms and soiled function rooms shall be mechanically exhausted to the outside. Ventilation units shall distribute tempered heated or cooled air to all spaces and shall supply outside air in the quantity of either the sum of all exhausts or 20 cfm (.009 m3/s) per person whichever is greater. The quality of all exhausts must match the intake volume of all outside air. Supply, exhaust, and return fans shall run continuously while the building is occupied. Areas in which smoking is permitted shall be well vented by at least 35 cfm (.02 m3/s) per person to the outside in order to minimize smoke diffusion throughout the unit.

**457.1.4.2.6** All doors opening directly onto the unit from nonclient rooms or office areas shall be equipped with locksets which are key released to leave the client area and permit unobstructed return to the client area. Door closures are required to deny persons receiving services accidental unsupervised access to the contents of staff offices, janitorial closets, and mechanical areas.

**457.1.4.2.7** Corridors shall ensure maximum clear distances by recessing water fountains and fire extinguishers, or placing them in alcoves. Corridors in client areas must be at least a 6 foot (1829 mm) clear width; nonclient areas must be at least 44 inches (1118 mm) minimum clear width. Corridor ceilings shall be a minimum height of 7 feet 6 inches (2284 mm).

**457.1.4.2.8** Hot and cold running water under pressure shall be readily available in all washing, bathing, food preparation, and food handling areas. Hot water in client areas shall be at least 100°F (38°C), but not exceed 120°F (49°C).

**457.1.4.2.9** The minimum size for doors shall be no less than 3 feet (914 mm) wide and 6 feet 8 inches high (2032 mm). Areas accessible to persons with physical disabilities shall comply with applicable codes and standards.

**457.1.4.2.10** Since glass fragments are a safety hazard throughout the unit, the use of glass shall be minimal.

**457.1.4.2.11** All television sets must be securely fastened.

**457.1.4.2.12** Door closures shall not be utilized in unobserved client areas.

**457.1.4.2.13** All CSUs and SRTs equipped with electronic locks on internal doors or egress doors shall ensure that such locks have manual common key mechanical override that will operate in the event of a power failure or fire. Egress pathways and doors shall be locked as provided for in the *Life Safety Code*, NFPA 101, Chapter 12, as incorporated by reference in Chapter 59A-3, *Florida Administrative Code* as adopted by the *Florida Fire Prevention Code*,

**457.1.4.2.14** CSUs and SRTs with electronic or magnetic door locks or other fundamental operational components which are electric shall have either: a battery back-up system rated for facility emergency power draw and capable of sustaining door locks and emergency operations for a minimum period of 6 hours; or an emergency generator with transfer switch with a battery pack back-up system capable of operating for 2 hours at facility emergency power draw level.

**457.1.4.2.15** The use of door vision panels and windows shall minimize the opportunity for isolation of staff or persons served in unobserved areas. This does not include privacy provisions such as bathrooms and bedrooms.

**457.1.4.3 Uniform specifications.**

**457.1.4.3.1** The design shall ensure that each person receiving services in a CSU or SRT is provided a minimum of 175 square feet (16 m2) of usable client space.

**457.1.4.3.2** Tamper-resistant screws shall be used to protect electrical switches and outlets throughout the facility in all areas accessible to persons receiving services. Lighting fixtures shall be tamperproof type throughout the facility in all areas accessible to persons receiving services.

**457.1.4.3.3** All electrical switches and outlets in wet areas shall be ground-fault protected with a remote breaker switch. Tamperproof, safety type duplex outlets shall be used in all areas accessible to persons receiving services.

**457.1.4.3.4** Air ducts shall be covered with a perforated type metal grille not residential louvered grilles, throughout the unit in all areas accessible to persons receiving services.

**457.1.4.3.5** All hose bibbs shall be equipped with a vacuum breaker device.

**457.1.4.3.6** The unit shall have a minimum of one drinking fountain.

**457.1.4.3.7** Ceiling height in bedrooms, activity areas, and bathrooms shall be at least 9 feet (2743 mm).

**457.1.4.3.8** The operation of all perimeter locks shall ensure reasonable control over both access and egress.

**457.1.4.4 Administration and public areas.**

**457.1.4.4.1** Waiting rooms shall have an adjacent rest room which is designed to accommodate persons with physical disabilities in accordance with the *Florida Building Code, Accessibility*.

**457.1.4.4.2** The entrance shall be grade level, sheltered from inclement weather and accessible to persons with physical disabilities in accordance with the *Florida Building Code, Accessibility*.

**457.1.4.4.3** The lobby shall include a drinking fountain and space for clerical personnel. Private interview space for emergency screening of voluntary persons shall be adjacent to the lobby.

**457.1.4.5 Emergency screening area for CSUs.**

**457.1.4.5.1** This shall be a locked area in which law enforcement admissions may be received. This area shall not be wholly isolated visually from the CSU to provide safety for emergency screening personnel who may become isolated in this area. This area shall provide for medical clearance, emergency screening, bathroom facilities, and other activities which may be necessary.

**457.1.4.5.2** A separate entrance shall be provided directly to emergency screening areas and examination rooms for law enforcement personnel. It shall have a driveway where a law enforcement vehicle can pull immediately adjacent to the building before transferring a person through the separate entrance to the emergency screening area. The law enforcement entrance shall also have a lock box where the law enforcement officer can lock his weapons during such time as he or she is in the facility.

**457.1.4.5.3** A separate bathroom with supervised shower area shall be located so that all persons being admitted may be showered before being admitted to the residential section of the unit.

**457.1.4.6 Seclusion rooms.**

**457.1.4.6.1** Each CSU shall have a minimum of two seclusion rooms that shall share a common vestibule with a bathroom off the vestibule area. Each SRT shall have at least one seclusion room. Seclusion rooms shall be free of sharp edges or corners and be strongly constructed to withstand repeated physical assaults. Walls shall be either concrete block or double layered to provide resistance and be smooth. The ceilings shall be 9 feet (2743 mm) in clear height, hard-coated, and lighting fixtures recessed and tamperproof. Lighting fixtures shall be nonbreakable, preferably Lexan, and shall be installed with tamperproof screws, as shall any other items in the seclusion rooms. The seclusion room door shall be heavy wood or metal at least 36 inches (914 mm) in width and shall open outward. The door frame shall be heavy steel and shall be thoroughly bolted into the wall and cemented in.

**457.1.4.6.2** At least one seclusion room in the CSU shall have a sturdily constructed bed, without sharp edges and bolted to the floor. A bed in the SRT seclusion room is optional; however, if present, the bed shall meet the same requirements as specified for the CSU. Its placement in the room shall provide adequate space for staff to apply restraints and not assist individuals in tampering with the lights, smoke detectors, cameras, or other items that may be in the ceiling of the room. There shall be a rheostat control mechanism outside the room to adjust the illumination of the light in the seclusion room.

**457.1.4.6.3** The floor and walls, up to a height of 3 feet (914 mm), shall be coated with an impermeable finish to resist penetration of body fluids. One seclusion room shall have a floor drain. A hose bibb shall be in a readily adjacent area such as a bathroom.

**457.1.4.6.4** There shall be a vision panel in the door of the seclusion room, no larger than 8 inches by 8 inches (203 mm by 203 mm), which provides a view of the entire room. This vision panel shall be Lexan or other suitably strong material and it shall be securely mounted in the door. Provisions shall be made to ensure privacy from the public and other persons receiving services while providing easy access for staff observation.

**457.1.4.6.5** Seclusion rooms shall be a minimum of 70 square feet (7 m2) and a minimum room dimension of 9 feet (2743 mm).

**457.1.4.6.6** Fire sprinkler heads shall be ceiling mounted and either recessed or flush-mounted type without a looped spray dispersal head.

**457.1.4.6.7** A voice-activated and switchable emergency calling system for monitoring persons receiving services shall be provided in each seclusion room.

**457.1.4.6.8** Each seclusion room shall have an electronic visual monitoring system capable of viewing the entire room and be monitored from the nurses' station.

**457.1.4.7 Janitor's closet.**

**457.1.4.7.1** A janitor's closet shall be on the unit. It shall contain a floor receptor for mop water and provide space for mop bucket, brooms, and other minimal items. Caustic and other dangerous chemicals shall not be stored in this closet.

**457.1.4.7.2** This closet shall have an automatic door closer and have automatic relocking type lock.

**457.1.4.8 Bathrooms.**

**457.1.4.8.1** Access to a bathroom shall not be through another person's bedroom. Bathrooms shall provide space, in addition to bathing, for dry clothes and changing of clothes and for observation staff. The shower head shall be recessed or have a smooth curve from which items cannot be hung. There shall be no overhead rod, privacy stall supports, protrusions, or fixtures capable of carrying more than 40 pounds (18 kg) of weight. The ceiling shall be hard coated. Sprinkler heads shall be either recessed or a flush-mounted type dispersal head. The toilet shall be a flushometer-type, not residential with water tank and cover. Toilets shall be of heavy duty construction securely fastened to the floor and have seats with locking nuts. Secure cleanout access shall be provided for the toilet to clean out plugs and pipes. Floor drains in bathroom areas shall be of sufficient size that they cannot be plugged by standing on them.

**457.1.4.8.2** Mirrors shall not be common glass. A polycarbonate mirror, fully secured, and flat-mounted to the wall is required. Polished metal mirrors shall not be permitted.

**457.1.4.8.3** Lighting fixtures shall be recessed and tamperproof with Lexan or other strong translucent material.

**457.1.4.8.4** Bathroom fixtures, shower, lavatory, and toilet shall be readily accessible from a common area. If not accessible from a common area, they will be deemed to be available only to the occupants of directly adjoining bedroom or bedrooms.

**457.1.4.8.5** Each CSU and SRT shall have a bathroom of sufficient size for use by persons with physical disabilities. It shall include toilet, lavatory, shower, and safety grab bars for shower and toilet.

**457.1.4.8.6** The facility shall have a minimum ratio of one shower for each eight persons receiving services and one toilet and lavatory for each six persons receiving services. Individual shower stalls and dressing areas shall be provided. The use of gang showers is prohibited.

**457.1.4.9 Nurses' station.**

**457.1.4.9.1** The nurses' station shall be positioned so that the unit may be under constant direct visual surveillance. Charting and records areas shall be located in the rear of the nurses' station, and not in a separate area, so that staff on duty can readily observe the client areas. A bathroom shall be nearby for staff use. The nurses' station, if separated from client areas, shall utilize either Lexan or safety wire glass for enclosure to above counter top level. If not enclosed the counter top shall be at least 18 inches (457 mm) in width.

**457.1.4.9.2** Thirty is the maximum number of beds which may be served by a common nurses' station in colocated units, as described in Section 65E-12.106(23), F.A.C.

**457.1.4.9.3** The nurses' station, which functions as the primary control center, shall have necessary electronic assistance such as camera monitors and intercoms in more remote areas where persons may become isolated. Areas warranting visual and auditory monitoring include remote entrance or egress doors, isolated hallways, after hours law enforcement entrance, emergency screening area, and fenced recreational yard.

**457.1.4.10 Medication room.** The medication room shall be located near the nurses' station. The medication room shall have a sink, refrigerator, locked storage, and facilities for dispensing medication. Security against unauthorized access shall be assured. The refrigerator shall store medications and clean materials only.

**457.1.4.11 Examination room.** A suitable examination room shall be provided for physical examinations, nursing assessments, and other related medical activities. It shall include a sink for hand washing.

**457.1.4.12 Bedrooms.**

**457.1.4.12.1** Ceilings shall be nonaccessible to prohibit persons receiving services from entering attic spaces or having access to overhead pipes and beams. Light switches and electrical outlets shall be secured with nontamper type screws. When feasible each bedroom shall have a window, operable by staff, with an exterior view. Window sills shall not exceed a height of 36 inches (914 mm) above floor level and should incorporate protective screens or Lexan-type material to prevent direct access to glass surfaces. There should be no overhead protrusions available for hanging in excess of 40 pounds (18 kg) weight.

**457.1.4.12.2** Beds and other heavy furniture suitable for barricading the door shall be secured to the floor or walls.

**457.1.4.12.3** multiple occupant bedrooms shall be limited to a maximum of four occupants and shall be a minimum size of 60 square feet (6 m2) per bed with no less than a 30-inch (762 mm) separation between beds. Single occupant bedrooms shall be a minimum of 80 square feet (7 m2).

**457.1.4.12.4** Bedroom doors shall be a minimum of 36 inches wide.

**457.1.4.13 Kitchen and nourishment preparation area.**

**457.1.4.13.1** Preparation or food handling areas shall have water and plumbing fixtures suitable for cleaning dining utensils. The requirements for nourishment preparation areas are less than that of kitchens due to the minimal scale of operations for these areas. If these areas are accessible to persons receiving services, they should include appropriate safety considerations for sharp and other dangerous instruments and the elimination of hot surfaces. Space shall be provided for disposal of wet garbage. Refrigeration and freezer space shall be provided in these areas for the carryover of a minimum amount of perishable food.

**457.1.4.13.2** Kitchens shall comply with Chapter 64E-11, *Florida Administrative Code*, Food Preparation and Sanitation Requirements, as well as the 1985 NFPA 101, Chapters 12 and 13, Fire Safety Requirements as incorporated by reference in Chapter 59A3, *Florida Administrative Code* as adopted by the *Florida Fire Prevention Code*. Kitchens shall be designed with flow-through type operation where food arriving is immediately placed into dry storage or freezer units without walking through food preparation areas. The flow-through type system would provide for the preparation of food, serving and dishes returned with garbage and waste going out to an adjacent dumpster and can wash with water collection curbing and drain. A concrete pad shall be provided for the trash dumpster and garbage truck entrance.

**457.1.4.13.3** Kitchens shall be equipped with fire suppression hoods and through-wall grease laden air evacuation and ventilation systems. All electrical outlets shall be ground-fault circuit interrupter protected. If meals are to be served via an open area, directly from the kitchen, this area shall have a fire-rated steel retractable overhead door type mechanism to continue the fire wall protection around the kitchen area. Kitchens shall have heat detectors rather than smoke sensors.

**457.1.4.13.4** External to the kitchen, and outside the waste exit door, there shall be a curbed slop sink for mops and dirty kitchen water with an immediately accessible hose bibb and drain. This area shall be external to the kitchen area, but immediately adjacent to it, to provide ready disposal of waste water as well as for the removal of cleaning items from the kitchen when they are not in use.

**457.1.4.13.5** There shall be a large food storage pantry in or adjacent to the kitchen.

**457.1.4.13.6** Facilities using off-site kitchens for food preparation shall have an onsite food reception, warming, and holding area of sufficient size and with sufficient equipment to warm and hold food for each meal served. Required space shall include provision for proper disposal or holding of used implements and disposal of wet garbage in accordance with Chapter 64E-11, *Florida Administrative Code.*

**457.1.4.14 Dining area.** Each CSU or SRT shall have an attractive dining area on the unit. Seating capacity shall reflect the licensed capacity of the entire CSU or SRT, although residents may eat or be served in shifts during daily operations. Individual, rather than bench seating, shall be used for easy floor cleaning.

**457.1.4.15 Unit laundry facilities.**

**457.1.4.15.1** Provision shall be made for the storage of soiled laundry in an adjacent, isolated, fire-resistant area.

**457.1.4.15.2** Each CSU or SRT shall have a personal laundry room which shall incorporate a flow-through design in which dirty laundry enters, is sorted, placed in the washer, dried, folded, and moved out without crossing clean laundry with dirty laundry. CSUs and SRTs shall have a small washer and dryer for immediate unit needs and to wash clothes. These washing and drying units shall be equipped to sanitize clothes as a preventive measure of infection control.

**457.1.4.15.3** The soiled laundry room shall have a locked door equipped with automatic door closer to restrict access to cleaning chemicals. The soiled laundry room air shall be exhausted outside the facility.

**457.1.4.16 Clean laundry room.**

**457.1.4.16.1** A separate space shall be provided for clean laundry capable of storing an adequate supply of laundry for the size of the CSU or SRT. The laundry closet shall have a locked door to prevent access to these items by persons receiving services.

**457.1.4.16.2** Items stored on the top shelf shall provide an 18 inch (457 mm) clear space from sprinkler heads so as to not block dispersal of water.

**457.1.4.17 Fenced recreational area.**

**457.1.4.17.1** CSUs and SRTs shall have a no less than 6-foot-high (1829 mm) fenced, out-of-doors area where persons receiving services may have access to fresh air and exercise. It must provide privacy for persons receiving services otherwise exposed to public view. This area shall be constructed to retain persons inside the area and minimize elopements from the area, although it is not a secure area.

**457.1.4.17.2** The fenced area shall provide some shaded area where persons receiving services may be out of doors without being in direct sunlight or may receive sunlight as they desire. The enclosing fences shall have an exit gate which is located away from the building as a secondary egress from the fenced area, for use in fire situations, or access by lawn maintenance equipment. The gate shall be provided with a lock which is readily accessible from both sides. The area of this fenced enclosure shall be at least 1,100 square feet (102 m2) including an activity area having dimensions of not less than 20 feet by 40 feet (6096 mm by 1219 mm).

**457.1.4.17.3** Objects shall not be placed near the fence to provide a ready step ladder over the fence and, if fabric fencing is used, the horizontal bracing used for corners shall be outside the fabric to preclude its use as an escape ladder step. The fenced area shall be designed, without blind corners, to be readily visible by one staff member standing in a central location. If desired, the fence may be topped with a 45-degree inward slanting restraining-type wire. The use of barbed wire and other sharp injurious materials, however, is prohibited.

**457.1.4.17.4** This area, as all other primary fire exit routes, shall have egress lighting which is connected to the power side of the facility electrical panel so that in the event of a fire and electrical panel disconnect, the exit and congregation areas would still have lighting.

**457.1.4.18 Multipurpose room.** In addition to open, on unit floor space, each CSU and SRT shall have an accessible multipurpose room for group activities of at least 180 square feet (7 m2). This area may be the dining area.

**457.1.4.19 Off unit storage areas.**

**457.1.4.19.1** Each CSU and SRT shall have appropriate storage, in nonclient areas, for operating supplies and materials.

**457.1.4.19.2** Adjacent nonclient area storage for personal belongings shall be a minimum of 8 cubic feet (.23 m3) for each person receiving services.

**457.2 Community mental health regulation.** Adult residential treatment facilities (RTFs) shall be limited to adults and comply with the regulations in sections 457.2.1 through 457.2.4.

**Note:** Other administrative and programmatic provisions may apply. See Department of Children and Family Services (DCFS) Rule 65E-4.016, *Florida Administrative Code*, and Chapter 394, *Florida Statutes*.

**457.2.1 Facility standards.**

**457.2.1.1 Building construction requirements.** The construction and renovation of a facility shall comply with the provisions of the Florida Building Code.

**457.2.2 Health and safety.** Facilities and additions shall be constructed to allow full compliance with the provisions of this section.

**457.2.2.1 Fire safety.**

**457.2.2.1.1** Residential treatment facilities shall comply with all applicable federal, state and local fire safety standards as follows:

1. Level IA licensed facilities shall comply with the fire codes contained in Chapter 69A-3, Fire Prevention-General Provisions, *Florida Administrative Code*, as described in the NFPA 101, Chapters 18 and 19, Special Definitions as adopted by the *Florida Fire Prevention Code*, as applicable to limited health care facilities.

2. For facility Level IB, which may have no more than three residents incapable of self preservation, and for facility Levels II, III, IV and V, which may have no residents incapable of self-preservation, each resident record shall have a signed statement by a physician or licensed psychologist regarding the resident's capability of self-preservation.

3. Facility Levels IB, II, III, IV and V shall have a prompt evacuation capability.

**457.2.2.1.2** Level IV and V facilities shall have a written policy on the safe use of extension cords and adapters. The use of extension cords and adaptors is prohibited in Level I, II and III facilities.

**457.2.2.1.3** Electrical cords and appliances shall be maintained in a safe condition.

**457.2.2.1.4** Portable heating devices shall be used only in emergency situations as defined in agency procedures approved by the governing board.

**457.2.2.1.5** Flammable liquids or gas cylinders shall not be positioned near flame or heat sources, nor stored with combustible materials.

**457.2.2.1.6 Emergency power.** The facility shall provide egress lighting that will operate in the event of a power failure.

**457.2.2.1.7 Smoking.** The program shall have a written policy governing smoking in the facilities. Smoking shall be prohibited in any area of the facility where combustible supplies, materials, liquids or gases will be used or stored.

**457.2.2.1.8 Fire safety inspections.** A fire safety inspection shall be obtained before occupying any new physical facility or addition.

**457.2.2.2 Personal safety.**

**457.2.2.2.1** The building shall be free of hazards such as cracks in the floors, walls or ceiling; warped or loose boards, tile, linoleum, handrails or railings; and broken window panes or missing window screens.

**457.2.2.2.2** Protection shall be provided from sharp or jagged projections, "invisible" glass, moving parts, heated surfaces, heavy objects that could fall, or any other potentially hazardous condition.

**457.2.2.2.3** Grab bars shall be nonremovable.

**457.2.2.2.4** The temperature of the hot water supply shall be regulated and shall be between 105°F (41°C) and 115°F (46°C) at the outlet.

**457.2.2.2.5** Any electrical fans, except ceiling paddle fans, shall be screened. All electrical fans, including paddle fans, shall be placed in a safe location.

**457.2.2.2.6** Indoor and outdoor recreational areas shall be provided with safeguards designed for the needs of the residents.

**457.2.2.2.7** Outdoor recreational areas shall be well drained.

**457.2.2.3 Health and sanitation.**

**457.2.2.3.1** Appropriate health and sanitation inspection certificates shall be obtained before occupying any new physical facility or addition, and at least yearly or as required by statute, thereafter. A report of the most recent inspection must be on file and accessible to authorized individuals.

**457.2.2.3.2** Hot and cold running water under pressure shall be readily available in all washing, bathing and food preparation areas.

**457.2.2.3.3** The kitchen and food preparation area shall be well-lighted, ventilated and located apart from areas which could cause food contamination. All doors and windows in the kitchen and food preparation areas that open to the outside shall be screened.

**457.2.3 Food service.**

**457.2.3.1** For food service areas with a capacity of 13 or more residents, all matters pertaining to food service shall comply with the provisions of Chapter 64E-11, Florida Administrative Code.

**457.2.3.2** **Food preparation, sanitation and storage.**

**457.2.3.2.1** Each refrigerator or freezer used for storage of perishable foods shall be provided with an accurate indicating thermometer located in the warmest part toward the front side of the refrigerator or freezer so that the temperature can be easily and readily observed.

**457.2.3.2.2** Freezers should be kept at or below 0°F (-18°C).

**457.2.3.3 Dining.**

**457.2.3.3.1** Dining tables shall seat small groups of residents unless other arrangements are justified on the basis of resident needs.

**457.2.3.3.2** The dining area shall be suitably lighted, ventilated and furnished.

**457.2.4 Environment.**

**457.2.4.1** Residential facilities shall not be identified by an exterior sign or vehicle sign that labels the residents or special functions of the facility. Vehicle traffic and parking relating to the facility shall be similar to that of surrounding structures or residences.

**457.2.4.2** The grounds of the facility shall have adequate space for resident activities.

**457.2.4.3** The facility shall be accessible to persons with disabilities or the facility shall have written policies and procedures that describe how disabled individuals can gain access to the facility for necessary services.

**457.2.4.4** Areas that accommodate the following shall be available:

1. A full range of social activities;

2. Private conversations;

3. Group activities; and

4. Resident privacy, when appropriate.

**457.2.4.5** All areas of the facility occupied by residents shall be climatically controlled in a manner conducive to the comfort and privacy of the residents and shall include the following:

**457.2.4.5.1** A design temperature of at least 72°F (22°C) and not to exceed 85°F (29°C) shall be used for waking hours in all areas used by residents. During sleeping hours, a temperature of at least 68°F (20°C) shall be used. These temperature requirements apply unless otherwise mandated by federal or state authorities.

**457.2.4.5.2** When cooling devices are used, they shall be placed or adjusted in a manner which minimizes drafts.

**457.2.4.6** Drinking water shall be readily available and easily accessible to residents.

**457.2.4.7** Mirrors reasonably free of distortion shall be placed in appropriate places to aid in grooming and to enhance self-awareness.

**457.2.4.8** Clocks shall be provided to promote awareness of time and day.

**457.2.4.9** The use of door locks or closed sections of the building shall comply with all applicable safety standards.

**457.2.4.10** Clean, well-lighted and ventilated laundering facilities for resident use shall be available on the premises or in the immediate neighborhood.

**457.2.4.11** A telephone which allows private conversations shall be available and easily accessible within the facility.

**457.2.4.12** Facility lighting shall promote clear perceptions of people and functions. When and where appropriate, lighting shall be controlled by residents.

**457.2.4.13** Whenever feasible, the environment shall provide views of the outdoors.

**457.2.4.14** **Bedrooms.** Bedrooms shall be designed to meet the following criteria:

**457.2.4.14.1** All resident bedrooms shall be ventilated, well-lighted and located convenient to a bathroom.

**457.2.4.14.2** Resident bedrooms designated for single occupancy shall provide a minimum inside measurement of 80 square feet (7 m2) of usable floor space.

**457.2.4.14.3** Resident bedrooms designated for multiple occupancy shall provide a minimum inside measurement of 60 square feet (6 m2) of usable floor space per bed and be limited to four occupants.

**457.2.4.14.4** All resident bedrooms shall open directly into a corridor, a common use area or the outside, except in those facilities comprised of apartments.

**457.2.4.14.5** Each resident bedroom where furnishings are supplied by the facility shall be furnished with personal storage space and adequate space for hanging clothes.

**457.2.4.14.6** Bedroom doors shall not have vision panels.

**457.2.4.15 Bathrooms.** Bathrooms shall be designed to meet the following criteria:

**457.2.4.15.1** A toilet and lavatory facility shall be provided for every six residents, and toilets shall be equipped with seats.

**457.2.4.15.2** A minimum of one tub or shower facility, equipped with nonslip devices, shall be provided for every eight residents.

**457.2.4.15.3** Bathrooms shall be ventilated, adequately lighted and have clearly labeled hot and cold running water.

**457.2.4.15.4** Each bathroom shall have a door in working order to assure privacy.

**457.2.4.15.5** When there is more than one toilet or bathing facility in a bathroom, provisions are required for privacy.

**457.2.4.15.6** Bathrooms used by residents with disabilities shall be equipped to ensure safety and independent mobility.

**457.2.4.15.7** Sole access to toilet or bathing facilities shall not be through another resident's sleeping room, except in facilities comprised of apartments.

**457.2.4.16 Common living areas.** Common living areas shall be designed to meet the following criteria:

**457.2.4.16.1** A room, separate from sleeping areas, shall be provided where residents may read or engage in socialization or other leisure time activities.

**457.2.4.16.2** A minimum of 35 square feet (3 m2) of living and dining space per resident shall be provided by all facilities except those comprised of apartments. This space shall include living, recreational and other space designated accessible to residents, but shall not include bathrooms, corridors, storage space, or screened porches which cannot be adapted for year round use. Facilities with bedrooms which include living space may count the square footage that is in excess of the bedroom square footage requirements as part of the 35 square footage (3 m2) living and dining space requirements.

***Section 458 – Manufactured Buildings***

***Add Florida specific requirements from Section 428 of the 2010 Florida Building Code, Building to read as shown***

**SECTION 458**

**MANUFACTURED BUILDINGS**

***Change Section 458.1 to read as shown:***

**458.1 General.** The following administrative requirements for inspection and plan review apply to manufactured buildings including factory-built schools. Additional technical requirements for factory-built schools can be found in Section 453.

**Note:** See Department of Business and Professional Regulation ~~Community Affairs (DCA)~~ Rule 61-41 ~~9B-1~~, *Florida Administrative Code* and Chapter 553, *Florida Statutes*.

***Change Section 458.2 to read as shown:***

**458.2 Definitions.**

**458.2.1** **“Agency"** means an individual or entity authorized to perform inspections of or review plans for manufactured buildings as provided by Rule 61-41 ~~9B-1~~, *Florida Administrative Code*.

**458.2.2** **"Factory-built school"** means any building designed or intended for use as a school building which is manufactured in whole or in part at an off-site facility, including prefabricated educational facilities, factory-built educational facilities and modular built educational facilities that are designed to be portable, relocatable, demountable or reconstructible, are used primarily as classrooms or the components of an entire school and do not fall under the provisions of Sections 320.822-320.862, *Florida Statutes*.

***Change Section 458.3 to read as shown:***

**458.2.3 Department.** Refers to Department of Business and Professional Regulation ~~Community Affairs~~.

**458.3 Inspections.** Inspection of installation of manufactured buildings and construction activities conducted at the site of the installation shall by conducted pursuant to Chapter 1 hereof. Inspections during the manufacturing process shall be conducted by those agencies as follows:

**458.3.1** Inspections shall be conducted at the manufacturing facility by an appropriately licensed representative of an agency selected by the manufacturer. The inspections shall ensure that the buildings are being manufactured in compliance with the applicable codes and the approved plans. Once an agency has inspected a manufactured building, the manufacturer shall not seek to have the building inspected by another agency, nor shall any agency inspect a building that has already been inspected by another agency unless the subsequent inspection is at the direction of the department or unless the building or modification thereto is being inspected for recertification by the department.

**458.3.2** At a minimum, a certified agency shall meet the criteria in Sections 458.3.2.1 through 458.3.2.4.

**~~458.3.2.1~~** ~~With regard to manufactured buildings, observe the manufacture of the first building built subsequent to the plan approval from start to finish, inspecting all subsystems (electrical, plumbing, structural, mechanical or thermal)  thereof. Continual observation and inspection, of the manufacturing process, shall continue until the agency determines that the implementation of the manufacturer's quality control program capabilities, in conjunction with application of the approved plans and specifications, result in a building that meets or exceeds the standards adopted herein. Thereafter, the agency shall inspect each module produced during at least one point of the manufacturing process and shall inspect a minimum of 75 percent of the subsystems (electrical, plumbing, structural, mechanical or thermal) or 20 percent of storage sheds that are not designed for human habitation and have a floor area of 720 square feet (67 m2) or less manufactured pursuant to the approved plan. Where a production line does not provide the subsystem percentages of inspections prescribed, in a single inspection, additional inspections shall be performed until prescribed percentages of installed subsystems are inspected.~~

**~~458.3.2.2~~** ~~With regard to components, observe the manufacture of the first unit assembled subsequent to the plan approval, from start to finish, inspecting all subsystems thereof. Continual observation and inspection shall continue until the agency determines that the implementation of the manufacturer's quality control program in conjunction with application of the approved plans and specifications and the manufacturer's capabilities result in a component that meets or exceeds the codes and standards adopted herein. Thereafter, the agency shall inspect not less than 20 percent of the manufactured building components and 75 percent of the subsystems in the inspected component.~~

**458.3.2.1**  With regard to manufactured buildings, observe the first building built, or with regard to components, observe the first unit assembled, after certification of the manufacturer, from start to finish, inspecting all subsystems: electrical, plumbing, structural, mechanical, or thermal. Continue observation of the manufacturing process until the approved inspection agency determines that the manufacturer's quality control program, in conjunction with the

application of the plans approved by the approved inspection agency, will result in a building and components that meet or exceed the applicable Florida Building Code requirements.

Thereafter, inspect each module produced during at least one point of the manufacturing process and inspect at least 75 percent of the subsystems of each module: electrical,

plumbing, structural, mechanical, or thermal.

**458.3.2.2** .With respect to components, inspect at least 75 percent of the manufactured building components and at least 20 percent of the storage sheds that are not designed for human habitation and that have a floor area of 720 square feet or less.

**458.3.2.3** During each inspection, the agency shall verify the manufacturer's inplant quality control program is working as set forth in the approved quality control manual.

**458.3.2.4** Should work stop on a particular module or component for a period of two months, reinspection shall be required.

**458.3.3** When an agency discovers a deviation from the code or the approved plans which creates or threatens to create an imminent life safety hazard, all buildings or components which have progressed through that stage of production since the agency's previous inspection shall be inspected to ensure the absence of that deviation, and the agency shall immediately notify the manufacturer and the department in writing. Any building or component exhibiting the deviation shall be brought into conformance with the applicable code and the approved plans by the manufacturer within thirty days of notification of the deviation by the agency. The corrective action must be left available for reinspection by the agency.

**458.3.4** The agency shall note all inspections, deviations and corrective actions in a written inspection report and shall complete the inspection report portion of the building code information system available via the Internet.

**458.3.5** The agency shall give a copy of the inspection report(s) to the manufacturer for record and shall retain another copy. The agency or the manufacturer shall provide a copy of an inspection report to the department when requested.

**458.4 Design plan and systems approval.** Plan review pertaining to installation of manufactured buildings and construction activities conducted at the site of the installation shall be conducted pursuant to Chapter 1 hereof. Plan review pertaining to construction activities occurring within the manufacturing process shall be conducted by Department approved agencies. If the residential manufactured building is transportable in one or more sections and is 8 body feet or more in width or 40 body feet (12 192 mm) or more in length, or, when erected on site, is 320 square feet (29 m2) or more, and which is built on a permanent chassis, the manufacturer shall certify the manufactured building has been excluded from regulation by the United States Department of Housing and Urban Development**.**

**458.4.1 Plan approval expiration.** Plan approvals for manufactured buildings shall expire upon the effective date of the new code. Upon revision of the *Florida Building Code,* plan approvals shall expire upon the effective date of that revision unless the manufacturer files, with the department, a sworn statement by an agency the plans have been reviewed and are in compliance with the revisions to the *Florida Building Code*. The Agency shall transmit plans electronically through the Building Code Information System to the Department**.**

**Exception**: In accordance with section 105.3.7, Manufacturers should be permitted to complete all buildings designed and approved prior to the effective date of a new code edition, provided a clear signed contract is in place. The contract shall provide specific data mirroring that required by an application for permit, specifically, without limitation, date of execution, building owner or dealer, and anticipated date of completion. However, the construction activity must commence within 6 months of the contract's execution. The contract is subject to verification by the Department of Business and Professional Regulation ~~Community Affairs.~~

**458.4.2** **Evidence of agency approval.** Approved plans and specifications shall be evidenced by a letter of certification from the agency. No manufacturing activity shall commence until plan approval has been obtained from the agency.

Approved copies of the design plans and specifications shall be returned to the manufacturer with an agency approval letter indicating the limitations, if any, of such approval. An approved copy of the plans shall be available at each place of manufacture, which shall be made available for inspection and monitoring. Upon approval of the plans, the agency shall electronically submit the plans bearing the approval stamp, with a list of any limitations of that plan approval, to the department via the Building Code Information System at [www.floridabuilding.org](http://www.floridabuilding.org/)**.**

**458.5 Factory-built schools, plan review (also see Section 453, State Requirements for Education Facilities).** Plan review of plans for constructed factory-built schools shall be performed by the agency selected by the department. An applicant for plan approval shall submit complete plans to the agency in the manner and format agreed to by the agency and the applicant. Upon determination by the agency that the submitted plans comply with all applicable standards, the agency shall certify such determination by affixing an approval stamp on each page of the plans, and shall return one copy to the applicant, maintain an original set, and submit one copy electronically to the department. The agency shall be compensated for the actual cost of the plan review by the applicant. No manufacturing activity shall commence until plan approval has been obtained from the agency. Plan review at a minimum shall include those items identified in Chapter 1 hereof.

**458.~~5.1~~.6 Factory-built schools, plan review, inspections and work progress reports (also see Section 453, State Requirements for Education Facilities).**

**458.~~5.2~~ 6.1 Inspectors.** The school board or Florida college (educational entity) which is to utilize the factory-built school shall be responsible for compliance with inspection requirements. Inspections may be performed by an agency**.**

**458.~~5.3~~ 6.2 New construction.** All buildings shall be subject to inspection during the manufacturing process. The educational entity shall ensure that factory inspections are performed periodically and are sufficient to ensure the building and its systems comply with the applicable standards. Inspections may be performed by an agency. The inspector shall require the correction of all deficiencies found during the manufacturing process. Upon an inspector's determination that the building complies with the applicable standards, the inspector shall provide the department the information as required on the data plate for the building and identify the building as satisfactory for use as an educational facility on the building code information system.

***Section 459 – Boot Camps for Children***

***Add Florida specific requirements from Section 429 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 459**

**BOOT CAMPS FOR CHILDREN**

**459.1** Boot camps for children shall comply with the design and construction standards as described herein. Enforcement and interpretation of these provisions shall be by the entities authorized by Chapter 553.80, *Florida Statutes*.

**Note:** Other administrative and programmatic provisions may apply. See Department of Juvenile Justice Rule 63-E 2, *Florida Administrative Code*, and Chapter 39, *Florida Statutes*.

**459.2 Facility structural and operational standards.**

**459.2.1** The facility shall conform to the *Florida Fire Prevention Code*. All new construction and building renovations shall comply with the *Florida Building Code*.

**459.2.2** All juvenile justice residential treatment program facilities shall conform to the *Florida Building Code.*

**459.2.3** All juvenile justice residential treatment program facilities shall comply with the sanitation, health and fire codes set forth in the Florida Building Code and in the *Florida Fire Prevention Code*.

***Section 460 – Mausoleums and Columbariums***

*Add Florida specific requirements from Section 430 of the 2010 Florida Building Code, Building to read as shown:*

**SECTION 460**

**MAUSOLEUMS AND COLUMBARIUMS**

**460.1 General**. The provisions of Section 460 shall apply to buildings or structures as defined in Section 202 as chapel mausoleums, garden mausoleums, nonvisitation crypt mausoleums, and columbariums. All crypts and niches built after this code becomes effective shall conform to this code.

**460.2 Occupancy classification**. Mausoleums and columbariums shall be classified as a Group S2 low hazard storage occupancy.

**460.3 Construction type.** Mausoleums, columbariums and accessory occupancies shall be of Type I unsprinklered, Type II unsprinklered, or Type IIB unsprinklered construction.

**460.4 Accessory occupancies**. Accessory occupancies shall comply with Section 508.2.

**460.5 Structural loads**. Mausoleums and columbariums shall be designed to comply with the structural design requirements of Chapter 16. Crypts shall be designed for a minimum total live load of 35 psf (2 kN/m2).

**460.6 Mausoleum and columbarium construction**. The design and construction of mausoleums and columbariums shall comply with the *Florida Building Code, Building* and Section 460.6.

**460.6.1 Plumbing systems.** Mausoleums and columbariums shall not be required to comply with the *Florida Building Code, Plumbing*.

**Exception:** Accessory areas and an occupancy in a mixed occupancy building shall comply with *Florida Building Code, Plumbing*. The number and location of plumbing facilities shall be based on the accessory areas and the mixed occupancy areas.

**460.6.2 Mechanical systems.** Mausoleums and columbariums shall not be required to comply with the *Florida Building Code, Mechanical*.

**Exceptions:**

1. Accessory areas and an occupancy in a mixed occupancy building shall comply with *Florida Building Code, Mechanical*. Mechanical systems shall be based on the accessory areas and the mixed occupancy areas.

2. Crypt pressure relief system shall comply with Section 460.7.2 except that for family mausoleum units where all crypts are bordering an exterior wall, pressure relief ventilation shall be provided from the crypt to the outside of the mausoleum through the exterior wall or roof.

3. Niches shall not require pressure relief systems.

**460.6.3 Fire protection systems**. Mausoleums and columbariums shall not be required to comply with Chapter 9, Fire Protection Systems.

**Exception:** Accessory areas and an occupancy in a mixed occupancy building shall comply with Chapter 9. The fire protection systems shall be based on the accessory areas and the mixed occupancy areas.

**460.6.4 Interior finish.** The interior finish for mausoleums and columbariums shall be Class A for exits and exit access and Class B for other spaces. The floor tile, marble, and granite used in a chapel mausoleum shall comply with the Marble Institute of America (1998).

**460.6.5 Exterior finish.** The exterior finish for mausoleums and columbariums shall be one or more of the following finishes:

Granite

Marble

Rubbed concrete

Painted concrete

Stucco

Synthetic stucco

Waterproofing products

Tile

**460.7 Crypts.**

**460.7.1 Crypts construction**. Crypts and companion crypts shall be constructed of reinforced concrete complying with Chapter 19 and 460.7.1.

**460.7.1.1 Cast in place crypt.** Cast in placed crypts shall have a minimum thickness of 3 inches (76 mm) for floor slabs, walls, and other structural framework.

**460.7.1.2 Precast crypt.** Concrete shall have a minimum specified compressive strength

f/c of 5,000 psi (34.5 mPa). Crypt floor slabs and roof slabs shall have a minimum thickness of 2 ½ inches (63.5 mm) Crypt walls shall be a minimum thickness of 3 ½ inches (88.9 mm) at the top of the wall to a minimum of 2 inches (50.8 mm) at the bottom of the wall.

**460.7.1.3 Crypt front**. Crypt fronts are to be independent of the crypt panel. The front shall be Grade A exterior type granite or marble according to the Marble Institute of America (1998), or travertine, or bronze, or tile mosaic. The front shall be installed with a hanger system. The hangers, clips, and other exterior or interior fastenings shall be of copper-based alloy, copper, or stainless steel designed for strength and durability. Aluminum fastenings may be used if they will not react with any material or metal that they may come in contact with and when not embedded in concrete. The front, trim, and wall stone shall be a minimum ¾ inch (19.1 mm) thick, other materials used for crypt fronts shall be the thickness as dictated at the time by modern mausoleum construction.

**460.7.2 Crypt relief vent.** For family mausoleum units where all crypts are bordering an exterior wall, pressure relief ventilation shall be provided from the crypt to the outside of the mausoleum through the exterior wall or roof. For all other mausoleum units, each crypt shall have a pressure relief vent from the crypt to the roof of the mausoleum complying with Section M515, Mausoleum relief system, of the *Florida Building Code, Mechanical*. Niches shall not require pressure relief systems.

**460.8 Casket placement.** Casket placement shall have minimum interior dimensions of 2 feet 6 inches (762 mm) wide mm) by 2 feet 1 inch (635 mm) high by 7 feet 3 ½ inches (2223 mm) deep.

**460.9 Niches.** Niches shall be designed and constructed in accordance with Section 460.9.

**460.9.1 Minimum size.** Niches shall have a minimum volume of 200 cubic inches (7 m3) with a minimum width of 4 ½ inches (114.3 mm), a minimum height of 9 inches (228.6 mm), and a minimum depth of 5 inches (127 mm).

**460.9.2 Niche front**. The niche front shall be Grade A exterior-type granite or marble according to the Marble Institute of America (1998), or travertine, bronze, tile mosaic, glass, lexan, or plexiglass.

**460.9.3 Pressure relief systems.** Niches shall not require pressure relief systems.

**460.9.4 Wall thickness.** Niche wall thickness shall be the thickness as dictated at the time of construction by modern mausoleum and columbarium construction.

**460.10 Family mausoleum.** Family mausoleums consisting of six or fewer casket placements shall comply with either Sections 460.1 or 460.10.

**460.10.1 Materials.** Family mausoleums shall be constructed of the materials in Sections 460.10.1.1 through 460.10.1.6.

**460.10.1.1 Reinforced concrete floor.** Reinforced concrete floor shall have a minimum specified compressive strength f/c of 5,000 psi (34.5 mPa).

**460.10.1.2 Hardware.** Hardware and fasteners shall be of stainless steel or bronze.

**460.10.1.3 Doors.** When installed, doors and door hardware shall be bronze.

**460.10.1.4 Crypt front.** Crypt fronts shall be granite or marble.

**460.10.1.5 Walls and roof.** Walls and roof shall be of granite, marble or reinforced concrete.

**460.10.1.6 Floor.** The floor shall be granite, marble, or reinforced concrete.

**460.10.2 Crypt relief vent.** For family mausoleum units where all crypts are bordering an exterior wall, pressure relief ventilation shall be provided from the crypt to the outside of the mausoleum through the exterior wall or roof.

For family mausoleum units where all crypts are not bordering an exterior wall, each crypt shall have a pressure relief vent from the crypt to the roof of the mausoleum complying with Section M515, Mausoleum relief system, of the *Florida Building Code, Mec*hanical.

**460.10.3 Minimum thickness.** The minimum thickness for the components of a family mausoleum shall comply with Section 460.10.3.

**460.10.3.1 Family mausoleum.** Exterior walls shall be a minimum of 4 inches (101.6 mm). Roof shall be minimum of 6 inches (152 mm). Floor shall be a minimum of 6 inches (152 mm) granite, marble, or reinforced concrete. Shelves shall be a minimum of 2 inches (51 mm). Crypt fronts shall be a minimum of ¾ inch (19.1 mm).

**460.10.3.2 Burial chamber mausoleum.** Exterior walls shall be a minimum of 6 inches (152 mm). Roof shall be a minimum of 6 inches (152 mm). Floor shall be a minimum of 8 inches (203 mm) granite. Shelves shall be a minimum of 2 inches (51 mm). Crypt fronts shall be a minimum of ¾ inch (19.1 mm).

***Section 461 – Transient Public Lodging Establishments***

*Add Florida specific requirements from Section 431 of the 2010 Florida Building Code, Building to read as shown:*

**SECTION 461**

**TRANSIENT PUBLIC LODGING ESTABLISHMENTS**

**461.1** Any transient public lodging establishment, as defined in Chapter 509, *Florida Statutes*, and used primarily for transient occupancy as defined in Section 83.43(10), *Florida Statutes*, or any timeshare unit of a timeshare plan as defined in Chapters 718 and 721, *Florida Statutes*, which is of three stories or more and for which the construction contract has been let after the effective date of this code, with interior corridors which do not have direct access from the guest area to exterior means of egress and on buildings over 75 feet (22,860 mm) in height that have direct access from the guest area to exterior means of egress and for which the construction contract has been let after the effective date of this code, shall be equipped with an automatic sprinkler system installed in compliance with the provisions prescribed in the *NFPA 13, Standards for the Installation of Sprinkler Systems*. Each guestroom and each timeshare unit shall be equipped with an approved listed single-station smoke detector meeting the minimum requirements of NFPA 74, *Standards for the Installation, Maintenance and* *Use of Household*

*Fire Warning Equipment*, powered from the building electrical service, notwithstanding the number of stories in the structure, if the contract for construction is let after the effective date of this code. Single-station smoke detectors shall not be required when guest-rooms or timeshare units contain smoke detectors connected to a central alarm system which also alarms locally.

***Section 462 – Use of Asbestos in New Public Buildings or Buildings Newly Constructed for Lease to Government Entities – Prohibition***

***Add Florida specific requirements from Section 432 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 462**

**USE OF ASBESTOS IN NEW PUBLIC BUILDINGS**

**OR BUILDINGS NEWLY CONSTRUCTED FOR**

**LEASE TO GOVERNMENT ENTITIES-PROHIBITION**

**462.1** The use of asbestos or asbestos-based fiber materials is prohibited in any building, construction of which is commenced after September 30, 1983, which is financed with public funds or is constructed for the express purpose of being leased to any governmental entity.

***Section 463 - Adult Day Care***

***Add Florida specific requirements from Section 433 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 463**

**ADULT DAY CARE**

**463.1 General.** Adult day care facilities shall comply with the following design and construction standards.

**Note**: See Agency for Health Care Administration (AHCA) Rule 58A-6, Florida Administrative Code, and Chapter 400, Part V, *Florida Statutes*.

**463.2 Definitions.**

**"Adult day care center"** or **"center"** means any building, buildings, or part of a building, whether operated for profit or not, in which is provided through its ownership or management, for a part of a day, basic services to three or more persons who are 18 years of age or older, who are not related to the owner or operator by blood or marriage, and who require such services. The following are exempt from this part:

1. Any facility, institution, or other place that is operated by the federal government or any agency thereof.

2. Any freestanding inpatient hospice facility that is licensed by the state and which provides day care services to hospice patients only.

3. A licensed assisted living facility, a licensed hospital, or a licensed nursing home facility that provides services during the day which include, but are not limited to, social, health, therapeutic, recreational, nutritional and respite services, to adults who are not residents, so long as the facility does not hold itself out as an adult day care center.

**"Capacity"** shall mean the number of participants for which a center has been licensed to provide care at any given time and shall be based upon required net floor space.

**"Net floor space"** shall mean the actual climatically controlled occupied area, not including accessory unoccupied areas such as hallways, stairs, closets, storage areas, bathrooms, kitchen or thickness of walls, set aside for the use of the day care center participants.

**"Participant space"** shall mean the required net floor space per participant. Maximum participant capacity shall refer to the licensed capacity.

**463.3** The following minimum conditions shall be met:

**463.3.1** The floor surface in kitchens, all rooms and areas in which food is stored or prepared and in which utensils are washed or stored shall be of smooth nonabsorbent material and constructed so it can be easily cleaned and shall be washable up to the highest level reached by splash or spray.

**463.3.2** The walls and ceilings of all food preparation, utensil washing and hand washing rooms or areas shall have smooth, easily cleanable surfaces. Walls shall be washable up to the highest level reached by splash or spray.

**463.3.3** Hot and cold running water under pressure shall be easily accessible to all rooms where food is prepared or utensils are washed.

**463.3.4** Hand-washing facilities, provided with hot and cold running water, shall be located within the food preparation area in new adult day care facilities and adult day care facilities which are extensively altered.

**463.3.5** Multiuse equipment and utensils shall be constructed and repaired with materials that are nontoxic, corrosion resistant and nonabsorbent; and shall be smooth, easily cleanable and durable under conditions of normal use; and shall not impart odors, color or taste nor contribute to the contamination of food.

**463.3.6** A three-compartment sink or a two-compartment sink and a dishwater with an effective, automatic sanitizing cycle, shall be provided.

**463.3.7** Refrigeration units and hot food storage units used for the storage of potentially hazardous foods shall be provided with a numerically scaled indicating thermometer accurate to plus or minus 3°F (-16°C). The thermometer shall be located in the warmest or coldest part of the units and of such type and so situated that the temperature can be easily and readily observed.

**463.4** **Participant and program data, emergency procedures.** Fire safety protection shall be governed in accordance with the *Florida Fire Prevention Code*.

**463.5** **Physical plant, sanitary conditions, housekeeping standards and maintenance.**

**463.5.1** The participant capacity shall be determined by the total amount of net floor space available for all of the participants. Centers shall provide not less than 45 square feet (4 m2) of net floor area per participant. Centers shall be required to provide additional floor space for special target populations to accommodate activities required by participant care plans.

**463.5.2** Facilities exempt pursuant to Section 400.553, *Florida Statutes*, shall utilize separate space over and above the minimum requirement needed to meet their own licensure certification approval requirements. Only congregate space shall be included in determining minimum space. For purposes of this section, congregate space shall mean climatically controlled living room, dining room, specialized activity rooms, or other rooms to be commonly used by all participants.

**463.5.3** Center facilities shall consist of, but not be limited to, the following:

1. Bathrooms.

2. Dining areas.

3. Kitchen areas.

4. Rest areas.

5. Recreation and leisure time areas.

**463.5.4** A private area shall be available for the provision of first aid, special care and counseling services when provided, or as necessary for other services required by participants. This area shall be appropriately furnished and equipped.

**463.5.5** Bathrooms shall be ventilated and have hot and cold running water, supplying hot water at a minimum of 105°F (41°C) and a maximum of 115°F (46°C).

**463.5.6** Recreation and leisure time areas shall be provided where a participant may read, engage in socialization or other leisure time activities. The recreation areas also may be utilized for dining areas.

**463.5.7** All areas used by participants shall be suitably lighted and ventilated and maintained at a minimal inside temperature of 72°F (22°C) when outside temperatures are 65°F (18°C) or below, and all areas used by participants must not exceed 90°F (32°C). Mechanical cooling devices must be provided when indoor temperatures exceed 84°F (29°C). The facility shall have a thermometer which accurately identifies the temperature.

***Section 464 - Assisted Living Facilities***

***Add Florida specific requirements from Section 434 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 464**

**ASSISTED LIVING FACILITIES**

**464.1 Scope.** Assisted living facilities shall comply with the following design and construction standards as described herein.

**Note:** Other administrative and programmatic provisions may apply. See Agency of Health Care Administration (AHCA) Rule 58A-5, *Florida Administrative Code* and Chapter 400 Part III, *Florida Statutes*.

**464.2 Definitions.**

**AGENCY.** The Agency for Health Care Administration.

**AHCA CENTERAL OFFICE.** The Assisted Living Unit, Agency for Health Care Administration.

**ASSISTED LIVING FACILITY.** Any building or buildings, section or distinct part of a building, private home, boarding home, home for the aged or other residential facility, whether operated for profit or not, which undertakes through its ownership or management to provide housing, meals and one or more personal services for a period exceeding 24 hours to one or more adults who are not relatives of the owner or administrator. The following are exempted from this definition:

1. Any facility, institution, or other place operated by the federal government or any agency of the federal government.

2. Any facility or part of a facility licensed under Chapter 393, *Florida Statutes*, or Chapter 394, *Florida Statutes*.

3. Any facility licensed as an adult family care home under Part VII Chapter 400, *Florida Statutes*.

4. Any person who provides housing, meals and one or more personal services on a 24-hour basis in the person's own home to not more than two adults who do not receive optional state supplementation. The person who provides the housing, meals, and personal services must own or rent the home and reside therein.

5. Any home or facility approved by the United States Department of Veterans Affairs as a residential care home wherein care is provided exclusively to three or fewer veterans.

6. Any facility that has been incorporated in this state for 50 years or more on or before July 1, 1983, and the board of directors of which is nominated or elected by the residents, until the facility is sold or its ownership is transferred; or any facility, with improvements or additions thereto, which has existed and operated continuously in this state for 60 years or more on or before July 1, 1989, is directly or indirectly owned and operated by a nationally recognized fraternal organization, is not open to the public, and accepts only its own members and their spouses as residents.

7. Any facility certified under Chapter 651, *Florida Statutes*, or a retirement community, may provide services authorized under this section or Part IV of Chapter 400, *Florida Statutes* to its residents who live in single-family homes, duplexes, quadruplexes, or apartments located on the campus without obtaining a license to operate an assisted living facility if residential units within such buildings are used by residents who do not require staff supervision for that portion of the day when personal services are not being delivered and the owner obtains a home health license to provide such services. However, any building or distinct part of a building on the campus that is designated for persons who receive personal services and require supervision beyond that which is available while such services are being rendered must be licensed in accordance with this section. If a facility provides personal services to residents who do not otherwise require supervision and the owner is not licensed as a home health agency, the buildings or distinct parts of buildings where such services are rendered must be licensed under this section. A resident of a facility that obtains a home health license may contract with a home health agency of his or her choice, provided that the home health agency provides liability insurance and workers' compensation coverage for its employees. Facilities covered by this exemption may establish policies that give residents the option of contracting for services and care beyond that which is provided by the facility to enable them to age in place. For purposes of this section, a retirement community consists of a facility licensed under this section or under Part II of Chapter 400, *Florida Statutes*, and apartments designed for independent living located on the same campus.

8. Any residential unit for independent living which is located within a facility certified under Chapter 651 *Florida Statutes*, or any residential unit which is colocated with a nursing home licensed under Part II of Chapter 400 *Florida Statutes*. or colocated with a facility licensed under this section in which services are provided through an outpatient clinic or a nursing home on an outpatient basis.

**CAPACITY.** The number of residents for which a facility has been licensed to provide residential care.

**DEPARTMENT.** The Department of Elderly Affairs.

**DISTINCT PART.** Designated bedrooms or apartments, bathrooms and a living area; or a separately identified wing, floor or building which includes bedrooms or apartments,

bathrooms and a living area. The distinct part may include a separate dining area, or meals may be served in another part of the facility.

**DOEA ASSISTED LIVING PROGRAM.** The Assisted Living Program, Department of Elder Affairs.

**EXTENDED CONGREGATE CARE**. Acts beyond those authorized in subsection (5) that may be performed pursuant to part I of Chapter 464, *Florida Statutes*, by persons licensed thereunder while carrying out their professional duties. The purpose of such services is to enable residents to age in place in a residential environment despite mental or physical limitations that might otherwise disqualify them from residency in a facility licensed under this part.

**FOOD SERVICE.** The storage, preparation, serving and cleaning up of food intended for consumption in a facility or a formal agreement that meals will be regularly catered by a third party.

**PERSONAL SERVICES.** Direct physical assistance with or supervision of the activities of daily living and the self-administration of medication and other similar services which the department may define by rule. Personal services shall not be construed to mean the provision of medical, nursing, dental or mental health services.

**RELATIVE.** An individual who is the father, mother, stepfather, stepmother, son, daughter, brother, sister, grandmother, grandfather, great-grandmother, great-grandfather, grandson, granddaughter, uncle, aunt, first cousin, nephew, niece, husband, wife, father-in-law, mother-in-law, son-in-law, daughter-in-law, brother-in-law, sister-in-law, stepson, stepdaughter, stepbrother, stepsister, half brother or half sister of an owner or administrator.

**RENOVATION.** Additions, repairs, restorations or other improvements to the physical plant of the facility within a five-year period that costs in excess of 50 percent of the value of the building as reported on the tax rolls, excluding land, before the renovation.

**RESIDENT.** A person 18 years of age or older, residing in and receiving care from a facility.

**RESIDENT'S REPRESENTATIVE OR DESIGNEE.** A person other than the owner, or an agent or employee of the facility, designated in writing by the resident, if legally competent, to receive notice of changes in the contract executed pursuant to Section 400.424, *Florida Statutes*; to receive notice of and to participate in meetings between the resident and the facility owner, administrator or staff concerning the rights of the resident; to assist the resident in contacting the ombudsman council if the resident has a complaint against the facility; or to bring legal action on behalf of the resident pursuant to Section 400.429, *Florida Statutes*.

**464.3 Codes and standards for the design and construction of assisted living facilities.** Except as modified and required by this section of the code, Chapter 58A-5, *Florida Administrative Code* or Chapter 429 Part III, *Florida Statutes*, all new assisted living facilities and all additions, alterations, or renovations to existing assisted living facilities with more than 16 licensed beds shall also be in compliance with *The Guidelines for the Design and Construction of Health Care Facilities (The Guidelines*) Part I General, and section 4.1.4 Requirements for Assisted Living of Part 4, Residential Health Care Facilities, incorporated by reference.

**464.4 Additional physical plant requirements for assisted living facilities.** In addition to the codes and standards referenced in Section 464.3 of the code, the following minimum essential facilities shall apply to all new assisted living facilities.

**464.4.1** Indoor radon testing as mandated by Section 404.056(5), *Florida Statutes*, shall be completed by all facilities.

**464.4.2 Heating and cooling.**

**464.4.2.1** When outside temperatures are 65°F (18°C) or below, an indoor temperature of at least 72°F (22°C) shall be maintained in all areas used by residents during hours when residents are normally awake. During night hours when residents are asleep, an indoor temperature of at least 68°F (20°C) shall be maintained.

**464.4.2.2** During hours when residents are normally awake, mechanical cooling devices, such as electric fans, must be used in those as are of buildings used by residents when inside temperatures exceed 85°F (29°C) provided outside temperatures remain below 90°F (32°C). No residents shall be in any inside area that exceeds 90°F (32°C). However, during daytime hours when outside temperatures exceed 90°F (32°C), and at night, an indoor temperature of no more than 81°F (27°C) must be maintained in all areas used by residents.

**464.4.2.3** Residents who have individually controlled thermostats in their bedrooms or apartments shall be permitted to control temperatures in those areas.

**464.4.3 Common areas.**

**464.4.3.1** A minimum of 35 square feet (3 m2) of living and dining space per resident, live-in staff and livein family member shall be provided except in facilities comprised of apartments. This space shall include living, dining, recreational or other space designated accessible to all residents, and shall not include bathrooms, corridors, storage space or screened porches which cannot be adapted for year round use. Facilities with apartments may count the apartment's living space square footage as part of the 35 square footage (3 m2) living and dining space requirement.

Those facilities also serving as adult day care centers must provide an additional 35 square feet (3 m2) of living and dining space per adult day care client. Excess floor space in residents' bedrooms or apartments cannot be counted toward meeting the requirement of 35 square feet (3 m2) of living and dining space requirements for adult day care participants. Day care participants may not use residents' bedrooms for resting unless the room is currently vacant.

**464.4.3.2** A room, separate from resident bedrooms, shall be provided where residents may read, engage in socialization or other leisure time activities. Comfortable chairs or sofas shall be provided in this communal area.

**464.4.3.3** The dining area shall be furnished to accommodate communal dining.

**464.4.4 Bedrooms.**

**464.4.4.1** Resident sleeping rooms designated for single occupancy shall provide a minimum inside measurement of 80 square feet of usable floor space. Usable floor space does not include closet space or bathrooms.

**464.4.4.2** Resident bedrooms designated for multiple occupancy shall provide a minimum inside measurement of 60 square feet (6 m2) of usable floor space per room occupant.

**464.4.4.3** Resident bedrooms designated for multiple occupancy in facilities newly licensed or renovated six months after October 17, 1999, shall have a maximum occupancy of two persons.

**464.4.4.4** All resident bedrooms shall open directly into a corridor, common use area or to the outside. A resident must be able to exit his bedroom without having to pass through another bedroom unless the two rooms have been licensed as one bedroom.

**464.4.4.5** All resident bedrooms shall be for the exclusive use of residents. Live-in staff and their family members shall be provided with sleeping space separate from the sleeping and congregate space required for residents.

**464.4.5 Bathrooms.**

**464.4.5.1** There shall be at least one bathroom with one toilet and sink per six persons, and one bathtub or shower per eight persons. All residents, all live-in staff and family members, and respite care participants must be included when calculating the required number of toilets, sinks, bathtubs and showers. All adult day care participants shall be included when calculating the required number of toilets and sinks.

**464.4.5.2** Each bathroom shall have a door in working order to assure privacy. The entry door to bathrooms with a single toilet shall have a lock which is operable from the inside by the resident with no key needed. A nonlocking door shall be permitted if the resident's safety would otherwise be jeopardized.

**464.4.5.3** There shall be nonslip safety devices such as bath mats or peel off stickers in the showers and bathtubs of all facilities. Showers and bathtubs with a nonskid surface require a separate nonskid device only if the surface is worn. Grab bars shall be required in showers and bathtubs. Grab bars, whether portable or permanent, must be securely affixed to the floor or adjoining walls. Facilities newly licensed or renovated six months after October 17, 1999 must have grab bars next to the commode.

**464.4.5.4** Sole access to a toilet or bathtub or shower shall not be through another resident's bedroom, except in apartments within a facility.

**464.4.6 Security.** External boundaries of a facility or a distinct part of a facility, including outside areas, may be secured using egress control or perimeter control devices if the following conditions are met.

**464.4.6.1** The use of the device complies with all lifesafety requirements.

**464.4.6.2** Residents residing within a secured area are able to move freely throughout the area, including the resident's bedroom or apartment, bathrooms and all common areas, and have access to outdoor areas on a regular basis and as requested by each resident.

**464.4.6.3** Residents capable of entering and exiting without supervision have keys, codes or other mechanisms to exit the secured area without requiring staff assistance.

**464.4.6.4** Staff who provide direct care or who have regular contact with residents residing in secured areas complete Level 1 Alzheimer's training as described in Rule 58A-5.0191.

**464.4.6.5** Pursuant to Section 400.441, *Florida Statutes*, facilities with 16 or fewer residents shall not be required to maintain an accessible telephone in each building where residents reside, maintain written staff job descriptions, have awake night staff or maintain standardized recipes as provided in Rules 58A-5.0182(6)(g), 58A-5.019(2)(e), 58A-5.019(4)(a) and 58A-5.020(2)(b), respectively.

**464.5 Extended congregate care.**

**464.5.1 Physical site requirements.** Each extended congregate care facility shall provide a homelike physical environment which promotes resident privacy and independence including:

**464.5.1.1** A private room or apartment, or a semiprivate room or apartment shared with roommate of the resident's choice. The entry door to the room or apartment shall have a lock which is operable from the inside by the resident with no key needed. The resident shall be provided with a key to the entry door on request. The resident's service plan may allow for a nonlocking entry door if the resident's safety would otherwise be jeopardized.

**464.5.1.2** A bathroom, with a toilet, sink and bathtub or shower, which is shared by a maximum of four residents. A centrally located hydromassage bathtub may substitute for the bathtub or shower in two of the bath rooms. The entry door to the bathroom shall have a lock which is operable from the inside by the resident with no key needed. The resident's service plan may allow for a nonlocking bathroom door if the resident's safety would otherwise be jeopardized.

***Section 465 – Control of Radiation Hazards***

***Add Florida specific requirements from Section 435 of the 2010 Florida Building Code, Building.***

**SECTION 465**

**CONTROL OF RADIATION HAZARDS**

**465.1 Scope.** Control of radiation hazards shall comply with the following design and construction standards as described herein.

**Note:** Other administrative and programmatic provisions may apply. See Department of Health (DOH) Rule 64E-5, *Florida Administrative Code*, and Chapter 404, *Florida Statutes*.

**465.2 Control of access to high radiation areas.**

**465.2.1 Definitions.**

**HIGH RADIATION AREA.** An area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving a dose equivalent in excess of 1 mSv (0.1 rem) in 1 hour at 30 cm from any source of radiation or from any surface that the radiation penetrates. For purposes of this section, rooms or areas in which diagnostic X-ray systems are used for healing arts purposes are not considered high radiation areas.

**VERY HIGH RADIATION AREA.** An area, accessible to individuals, in which radiation levels from radiation sources external to the body could result in an individual receiving an absorbed dose in excess to 500 rad (5 gray) in 1 hour at 1 m from a source of radiation or from any surface that the radiation penetrates. At very high doses received at high dose rates, units of absorbed dose, gray and rad, are appropriate, rather than units of dose equivalent, sievert and rem.

**465.2.2** The licensee or registrant shall ensure that each entrance or access point to a high radiation area has one or more of the following features:

**465.2.2.1** A control device that upon entry into the area causes the level of radiation to be reduced below that level at which an individual might receive a deep dose equivalent of 0.1 rem (1 millisievert) in 1 hour at 30 cm from the source of radiation from any surface that the radiation penetrates;

**465.2.2.2** A control device that energizes a conspicuous visible or audible signal so that the individual entering the high radiation area and the supervisor of the activity are made aware of the entry; or

**465.2.2.3** Entryways that are locked except during periods when access to the areas is required with positive control over each individual entry.

**465.3 Caution signs.**

**465.3.1 Standard radiation symbol.** Unless otherwise authorized by the department, the symbol prescribed in this section shall use the colors magenta or purple or black on yellow background. The symbol prescribed is the three-bladed design as follows:

**465.3.1.1** **Radiation symbol.**

**465.3.1.1.1** Cross-hatched area is to be magenta or purple or black.

**465.3.1.1.2** The background is to be yellow.

**465.3.2 Exception to color requirements for standard radiation symbol**. In spite of the requirements of Section 465.3.1, licensees or registrants are authorized to label sources, source holders or device components containing sources of radiation that are subjected to high temperatures, with conspicuously etched or stamped radiation caution symbols and without a color requirement.

**465.3.3 Additional information on signs and labels.** In addition to contents of signs and labels prescribed in this part, the licensee or registrant shall provide on or near the required signs and labels additional information to make individuals aware of potential radiation exposures and to minimize the exposures.

**465.4 Posting requirements.**

**465.4.1 Posting of radiation areas.** The licensee or registrant shall post each radiation area with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, RADIATION AREA."

**465.4.2 Posting of high radiation areas**. The licensee or registrant shall post each high radiation area with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, HIGH RADIATION AREA" or "DANGER, HIGH RADIATION AREA."

**465.4.3 Posting of very high radiation areas.** The licensee or registrant shall post each very high radiation area with a conspicuous sign or signs bearing the radiation symbol and words "GRAVE DANGER, VERY HIGH RADIATION AREA."

**465.4.4 Posting of air-borne radioactivity areas.** The licensee shall post each air-borne radioactivity area with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, AIR-BORNE RADIOACTIVITY AREA" or "DANGER, AIR-BORNE RADIOACTIVITY AREA."

**465.4.5 Posting of areas or rooms in which licensed material is used or stored**. The licensee shall post each area or room in which there is used or stored an amount of licensed material exceeding 10 times the quantity of such material specified in State of Florida Office of Radiation Control Radioactive Material Requiring Labeling, May 2000, which is herein incorporated by reference and which is available from the department, with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL(S)" or "DANGER, RADIOACTIVE MATERIAL(S)."

**465.4.6** A licensee or registrant is not required to post caution signs in areas or rooms containing sources of radiation for periods of less than 8 hours if each of the following conditions is met.

**465.4.6.1** The sources of radiation are constantly attended during these periods by an individual who takes the precautions necessary to prevent the exposure of individuals to sources of radiation in excess of the limits established in this section, and

**465.4.6.2** The area or room is subject to the licensee's or registrant's control.

**465.4.7** Rooms or other areas in hospitals that are occupied by patients are not required to be posted with caution signs as specified in 64E-5.323 if the patient could be released from confinement as specified in 64E-5.622.

**465.4.8** A room or area is not required to be posted with a caution sign because of the presence of a sealed source provided the radiation level at 30 cm from the surface of the sealed source container or housing does not exceed 0.005 rem (0.05 millisievert) per hour.

**465.4.9** A room or area is not required to be posted with a caution sign because of the presence of radiation machines used solely for diagnosis in the healing arts.

**465.5 General requirements.**

**465.5.1 Shielding.** Each X-ray facility shall have primary and secondary protective barriers as needed to assure that an individual will not receive a radiation dose in excess of the limits specified in Part III of Chapter 64E-5, *Florida Administrative Code*.

**465.5.1.1** Structural shielding in walls and other vertical barriers required for personnel protection shall extend without breach from the floor to a height of at least 7 feet (2.1 m).

**465.5.1.2** Doors, door frames, windows and window frames shall have the same lead equivalent shielding as that required in the wall or other barrier in which they are installed.

**465.5.1.3** Prior to construction, the floor plans and equipment arrangement of all new installations, or modifications of existing installations, utilizing X-ray energies of 200 keV and above for diagnostic or therapeutic purposes shall be submitted to the Department of Health for review and approval. In computation of protective barrier requirements, the maximum anticipated workload, use factors, occupancy factors and the potential for radiation exposure from other sources shall be taken into consideration.

**465.5.1.3.1** The plans shall show, as a minimum, the following:

**465.5.1.3.1.1** The normal location of the X-ray system's radiation port; the port's travel and traverse limits; general direction of the useful beam; locations of any windows and doors; the location of the operator's booth; and the location of the X-ray control panel.

**465.5.1.3.1.2** The structural composition and thickness or lead equivalent of all walls, doors, partitions, floor and ceiling of the room concerned.

**465.5.1.3.1.3** The dimensions of the room concerned.

**465.5.1.3.1.4** The type of occupancy of all adjacent areas inclusive of space above and below the room concerned. If there is an exterior wall, the distance to the closest area where it is likely that individuals may be present.

**465.5.1.3.1.5** The make and model of the X-ray equipment and the maximum technique factors.

**465.5.1.3.1.6** The type of examinations or treatments which will be performed with the equipment.

**465.5.1.3.2** Information shall be submitted on the anticipated maximum workload of the X-ray system.

**465.5.1.3.3** If the services of a qualified person have been utilized to determine the shielding requirements, a copy of the report, including all basic assumptions used, shall be submitted with the plans.

**465.5.2 X-ray film processing facilities**.

**465.5.2.1 Processing facilities**. Each installation using a radiographic X-ray system shall provide suitable equipment for handling and processing radiographic film in accordance with the following provisions:

**465.5.2.1.1** The area in which undeveloped films are handled for processing shall be devoid of light with the exception of light in the wave lengths having no significant effect on the radiographic film.

**465.5.2.1.2** Film pass boxes, if provided, shall be so constructed as to exclude light when film is placed in or removed from the boxes, and shall incorporate adequate shielding to prevent exposure of undeveloped film to stray radiation.

**465.5.2.1.3** Darkrooms used by more than one individual shall be provided a positive method to prevent accidental entry while undeveloped films are being handled or processed.

**465.5.2.1.4** Where film is developed manually, the following conditions shall be met:

**465.5.2.1.4.1** At least one trisectional tank made of mechanically rigid, corrosion resistant material shall be utilized; and

**465.5.2.1.4.2** The temperature of each solution shall be maintained within the range of 600°F to 800°F (160°C to 270°C). Film shall be developed in accordance with the time-temperature relationships specified by the film manufacturer, or, in the absence of such recommendations by the film manufacturer, with the following time-temperature chart:

**465.5.2.1.4.3** Devices shall be utilized which will:

1. Indicate the actual temperature of the developer; and

2. Signal the passage of a preset time as short as 2 minutes.

**465.6 Doors, interlocks, and warning systems.**

**465.6.1** A licensee shall control access to the teletherapy room by a door at each entrance.

**465.6.2** A licensee shall equip each entrance to the teletherapy room with an electrical interlock system that shall:

1. Prevent the operator from turning on the primary beam of radiation unless each treatment room entrance door is closed;

2. Turn off the beam of radiation immediately when an entrance door is opened; and

3. Prevent the primary beam of radiation from being turned on following an interlock interruption until all treatment room entrance doors are closed and the beam on-off control is reset at the console.

**465.6.3** A licensee shall equip each entrance to the teletherapy room with a conspicuously visible beam condition indicator light.

**465.7 Radiation monitoring devices.**

**465.7.1** A licensee shall have a permanent radiation monitor in each teletherapy room capable of continuously monitoring beam status.

**465.7.2** Each radiation monitor shall be capable of providing visible notice of a teletherapy unit malfunction that results in an exposed or partially exposed source. The visible indicator of high radiation levels shall be observable by an individual entering the teletherapy room.

**TIME-TEMPERATURE CHART**

|  |  |  |
| --- | --- | --- |
| **Thermom Reading (Degrees)** | | **Minimum Developing Time (minutes)** |
| **C** | **F** |
| 26.7 | 80 | 2 |
| 26.1 | 79 | 2 |
| 25.6 | 78 | 2-1/2 |
| 25.0 | 77 | 2-1/2 |
| 24.4 | 76 | 3 |
| 23.9 | 75 | 3 |
| 23.3 | 74 | 3-1/2 |
| 22.8 | 73 | 3-1/2 |
| 22.2 | 72 | 4 |
| 21.7 | 71 | 4 |
| 21.1 | 70 | 4-1/2 |
| 20.6 | 69 | 4-1/2 |
| 20.0 | 68 | 5 |
| 19.4 | 67 | 5-1/2 |
| 18.9 | 66 | 5-1/2 |
| 18.3 | 65 | 6 |
| 17.8 | 64 | 6-1/2 |
| 17.2 | 63 | 7 |
| 16.7 | 62 | 8 |
| 16.1 | 61 | 8-1/2 |
| 15.6 | 60 | 9-1/2 |

**465.7.3** Each radiation monitor shall be equipped with a backup power supply separate from the power supply to the teletherapy unit. This backup power supply may be a battery system.

**465.8 Viewing systems.** A licensee shall construct or equip each teletherapy room to permit continuous observation of the patient from the teletherapy unit console during irradiation.

**465.9 Warning devices.**

**465.9.1** All locations designated as high radiation areas, and all entrances to such locations shall be equipped with easily observable warning lights that operate when and only when radiation is being produced.

**465.9.2** Except in facilities designed for human exposure, each high radiation area shall have an audible warning device which shall be activated for 15 seconds prior to the possible creation of such high radiation area. Such warning device shall be clearly discernible in all high radiation areas and in any adjacent radiation areas.

**465.9.3** Barriers, temporary or otherwise, and pathways leading to high radiation areas shall be identified in accordance with the Department of Health.

**465.10 Design requirements for radiation rooms.** Panoramic irradiators shall not be operated unless the following are met:

**465.10.1** Each entrance to a radiation room must have a door or other physical barrier to prevent inadvertent entry of personnel while the sources are exposed. Product conveyor systems can serve as barriers as long as they reliably and consistently function as a barrier. It must not be possible to move the sources out of their shielded position if any door or barrier to the radiation room is open. Opening the door or barrier while the sources are exposed must cause the sources to return promptly to their shielded position. The primary entry door must have a lock which is operated by the same key used to control source movement. The doors and barriers must not prevent any individual in the radiation room from leaving.

**465.10.2** Each entrance to a radiation room must have an independent backup access control to detect personnel entry while the sources are exposed if the primary access control fails. Entry while the sources are exposed must cause the sources to return to their fully shielded position and also must activate a visible and audible alarm to make the individual entering the room aware of the hazard. The alarm also must alert at least one other individual of the entry who is on site and who is trained to render or summon assistance promptly.

**465.10.3** A radiation monitor must be provided to detect the presence of high radiation levels in the radiation room before personnel entry. The monitor must be integrated with personnel access door locks to prevent room access when the monitor detects high radiation levels. The monitor must generate audible and visible alarms if high radiation levels are detected when personnel entry is attempted. The monitor can be located in the entrance or maze but not in the direct radiation beam.

**465.10.4** Before sources move from their shielded position, the source control automatically must activate conspicuous visible and audible alarms to alert people in the radiation room that the sources will be moved from their shielded position. The alarms must give individuals enough time to leave the room before the sources leave the shielded position.

**465.10.5** Each radiation room must have a clearly visible and readily accessible control which will allow an individual in the room to return the sources to their fully shielded position.

**465.10.6** Each radiation room must contain a control which allows the sources to move from the shielded position only if the control has been activated and the door or barrier to the radiation room subsequently has been closed within a preset time.

**465.10.7** Each entrance to the radiation room and each entrance to the area within the personnel access barrier of an underwater irradiator must be posted as required by this section. Panoramic irradiators also must be posted as required by this section. The sign can be removed, covered or otherwise made inoperative when the sources are shielded fully.

**465.10.8** If the radiation room has roof plugs or other movable shielding, it must not be possible to operate the irradiator unless the shielding is in its proper location. This requirement can be met by interlocks which prevent operation if shielding is not placed properly or by an operating procedure requiring inspection of shielding before operating.

**465.10.9** Underwater irradiators must have a personnel access barrier around the pool which must be locked to prevent access when the irradiator is not attended. Only operators and facility management shall have access to keys to the personnel access barrier. There must be an intrusion alarm to detect unauthorized entry when the personnel access barrier is locked. Activation of the intrusion alarm must alert an individual, not necessarily on site, who is prepared to respond or summon assistance.

**465.11 Fire protection.**

**465.11.1** The radiation room at a panoramic irradiator must have heat and smoke detectors. The detectors must activate an audible alarm. The alarm must be capable of alerting a person who is prepared to summon assistance promptly. The sources must become fully shielded automatically and the air handling systems within the radiation room must be disabled automatically if a fire is detected.

**465.11.2** The radiation room at a panoramic irradiator must be equipped with a fire suppression or extinguishing system capable of extinguishing a fire without the entry of personnel into the room. The system for the radiation room must have a shutoff valve to control flooding into unrestricted areas.

**465.12 Irradiator pools.**

**465.12.1** Irradiator pools must possess a watertight stainless steel liner or a liner metallurgically compatible with other components in the pool or be constructed so that there is a low likelihood of substantial leakage and have a surface designed to facilitate decon- tamination and must include a means of safely storing sources during repairs of the pool.

**465.12.2** Irradiator pools must have no penetration more than 0.5 m below the normal low water level which could allow water to drain out of the pool. Pipes which have intakes more than 0.5 m below the normal low water level must have siphon breakers to prevent the siphoning of the pool.

**465.12.3** A means must be provided to replenish water losses from the pool.

**465.12.4** An audible and visible indicator must be provided to indicate if the pool water level is below the normal low water level or above the normal high water level.

**465.12.5** Irradiator pools must be equipped with a purification system designed to maintain the water during normal operation at a level of conductance not exceeding 20 microsiemens per centimeter and with a clarity so the sources can be seen clearly.

**465.12.6** A physical barrier such as a railing or cover must be used around irradiator pools during normal operation to prevent personnel from accidentally falling into the pool. The barrier can be removed during maintenance, inspection, and service operations.

**465.12.7** If long-handled tools or poles are used in irradiator pools, the radiation dose rate on the handling areas of the tools must not exceed 2 millirem (0.02 millisievert) per hour.

**465.13 Design requirements.**

**465.13.1** Panoramic irradiators shall meet the following design requirements:

**465.13.1.1 Shielding.** The shielding walls shall be designed to meet generally accepted building code requirements for reinforced concrete and shall design the walls, wall penetrations, and entrance ways to meet the radiation shielding requirements of 64E-5.1407. If the irradiator will use more than 2 × 1017 becquerels (5 million curies) of activity, the licensee shall evaluate the effects of heating of the shielding walls by the irradiator sources.

**465.13.1.2 Foundations.** The foundation shall be designed with consideration given to soil characteristics to ensure it is adequate to support the weight of the facility.

**465.13.1.3 Fire protection.** The number, design, locations and spacing of the smoke and heat detectors and extinguishing system shall be appropriate to detect fires and that the detectors are protected from mechanical and radiation damage. The fire extinguishing system shall be designed to provide the necessary discharge patterns, densities, and flow characteristics for complete coverage of the radiation room and that the system is protected from mechanical and radiation damage.

**465.13.1.4 Wiring.** The electrical wiring and electrical equipment in the radiation room shall be selected to minimize failures due to prolonged exposure to radiation.

**465.13.2 Pool irradiators shall meet the following design requirements**.

**465.13.2.1 Pool integrity.** The pool shall be designed to assure that it is leak resistant, that it is strong enough to bear the weight of the pool water and shipping casks, that a dropped cask would not fall on sealed sources, that all penetrations meet the requirements of Section 465.12.2, and that metal components are metallurgically compatible with other components in the pool.

**465.13.2.2 Water-handling system.** The water purification system shall be designed to meet the requirements of Section 465.12.5. The system must be designed so that water leaking from the system does not drain to unrestricted areas without being monitored. The licensee shall design the water chiller system so that it shall compensate adequately for the amount of heat generated by the sealed sources. The water-handling system must have remote controls capable of safely operating a contaminated system.

**465.13.3 Floor penetrations.** No floor penetrations, including expansion joints, floor joints and drains, shall allow the uncontrolled release of water from the radiation room that has not been analyzed for its radioactive content.

**465.14 Construction control.** The requirements of this section must be met before loading sources. Panoramic irradiators shall meet the following construction requirements:

**465.14.1 Shielding.** The construction of the shielding shall be monitored to verify that it meets design specifications and generally accepted building code requirements for reinforced concrete.

**465.14.2 Foundations.** The construction of the foundations shall be monitored to verify that they meet design specifications.

**465.14.3 Fire protection.** The ability of the heat and smoke detectors shall be verified to detect a fire, to activate alarms and to cause the source rack to become fully shielded automatically. The operability of the fire suppression or extinguishing system shall also be verified

**465.14.4 Wiring.** The electrical wiring and electrical equipment that were installed shall be verified to meet the design specifications.

**465.15 Pool irradiators shall meet the following construction requirements.**

**465.15.1 Pool integrity**. The integrity of the pool shall be tested to verify that the pool meets the design specifications. The penetrations and water intakes shall be verified to meet the requirements of Section 465.12.2

***Section 466 – Day-Care Occupancies***

***Add Florida specific requirements from Section 436 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 466**

**DAY-CARE OCCUPANCIES**

**466.1 General.**

**466.1.1** Places of religious worship shall not be required to meet the provisions of this section in order to operate a nursery while services are being held in the building.

**466.1.2** Where day care occupancies with clients 24 months or less in age or incapable of self-preservation are located one or more stories above the level of exit discharge or where day care occupancies are located two or more stories above the level of exit discharge, smoke barriers shall be provided to divide such stories into a minimum of two smoke compartments. The smoke barriers shall be constructed in accordance with Section 709 but shall not be required to have a fire-resistance rating.

**466.2 Closet doors.** Every closet door latch shall be such that clients can open the door from inside the closet.

**466.3 Bathroom doors.** Every bathroom door lock shall be designed to permit opening of the locked door from the outside in an emergency. The opening device shall be readily accessible to the staff.

**466.4 Door closure.** Any exit door designed to be normally closed shall be kept closed and shall comply with Section 716.5.

**466.5 Location and construction types.** Day care occupancies shall be limited to the locations and construction types specified in Table 466.5. Day care homes and adult day care shall be permitted to be of any type construction permitted by this code.

**TABLE 466.5**

**DAY-CARE LOCATION AND TYPE OF CONSTRUCTION**

|  |  |  |  |
| --- | --- | --- | --- |
| **LOCATION OF DAY CARE** | **TYPE OF CONSTRUCTION** | | |
| **Sprinklered Building** | | **Construction Type** |
| 1 story below LED1 | Yes | | I, II, IIIA, IV, V-A |
| Level of Exit Discharge | No | | Any type permitted by this code |
| 1 story above LED1 | Yes No | | Any type |
| 2 or 3 stories above LED1 | Yes | | I, II, III-A, V-A |
| > 3 stories above LED1 but not high rise | Yes | | I |
| High rise | Yes | | I |
| **Notes:**  1LED means Level of Exit Discharge. | |

**466.6 Protection from hazards.** Rooms or spaces for the storage, processing or use of materials specified below shall be protected in accordance with the following:

**466.6.1** The following rooms or spaces shall be separated from the remainder of the building by fire barriers having a fire resistance rating of not less than 1-hour or shall be protected by an approved automatic extinguishing system.

1. Boiler and furnace rooms.

**Exception:** Rooms enclosing only air-handling equipment.

2. Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the building official.

3. Rooms or spaces used for the storage of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards.

4. Janitor closets.

**Exception:** Doors to janitor closets shall be permitted to have ventilating louvers where the space is protected by automatic sprinklers.

**466.6.2** The following rooms or spaces shall be separated from the remainder of the building by fire barriers having a fire resistance rating of not less than 1 hour and shall be protected by an approved automatic fire-extinguishing system.

1. Laundries.

2. Maintenance shops, including woodworking and painting areas.

3. Rooms or spaces used for processing or use of combustible supplies deemed hazardous by the building official.

4. Rooms or spaces used for processing or use of hazardous materials or flammable or combustible liquids in quantities deemed hazardous by recognized standards.

**Exception:** Food preparation facilities protected in accordance with NFPA 96 shall not be required to have openings protected between food preparation areas and dining areas. Where domestic cooking equipment is used for food warming or limited cooking, protection or segregation of food preparation facilities shall not be required if approved by the building official.

**466.6.3** Where automatic extinguishing is used to meet the requirements of this section, sprinkler piping serving not more than six sprinklers for any isolated hazardous area shall be permitted to be connected directly to a domestic water supply system having a capacity sufficient to provide 0.15 gpm/per square foot (6.1 L/min/m2) of floor area throughout the entire enclosed area. An indicating shutoff valve shall be installed in an accessible location between the sprinklers and the connection to the domestic water supply.

**466.7 Detection and alarm systems.** Day care occupancies shall be provided with a fire alarm system in accordance with Section 907 and this section.

**Exception:** Day care occupancies housed in one room.

**466.7.1** Initiation of the required fire alarm system shall be by manual means and by operation of any required smoke detectors and required sprinkler systems.

**466.7.1.1** Occupant notification signals shall be audible and visual signals in accordance with NFPA 72 and *Florida Building Code, Accessibility*. The general evacuation alarm signal shall operate throughout the entire building.

**Exceptions:**

1. Where total evacuation of occupants is impractical because of building configuration, only the occupants in the affected zones shall be initially notified. Provisions shall be made to selectively notify occupants in other zones to afford orderly evacuation of the entire building.

2. Where occupants are incapable of evacuating themselves because of age, physical or mental disability or physical restraint, the private operating mode as described in NFPA 72 shall be permitted to be used. Only the attendants and other personnel required to evacuate occupants from a zone, area, floor, or building shall be required to be notified. This notification shall include means to readily identify the zone, area, floor or building in need of evacuation.

**466.7.1.2 Fire department notification.** The fire alarm system shall be arranged to transmit the alarm automatically to the fire department in accordance with NFPA 72 by means of one of the following methods as approved by the building official:

1. An auxiliary alarm system, or

2. A central station connection, or

3. A proprietary system, or

4. A remote station connection.

**Exception:** Where none of the above means of notification is available, a plan for notification of the fire department, acceptable to the building official, shall be provided.

**466.7.2 Detection.** A smoke detection system shall be installed in accordance with NFPA 72, with placement of detectors in each story in front of doors to the stairways and in the corridors of all floors occupied by the day care occupancy. Detectors also shall be installed in lounges, recreation areas and sleeping rooms in the day care occupancy.

**Exception:** Day care occupancies housed in one room.

**466.8 Corridors.** Every interior corridor shall be constructed of walls having not less than a 1-hour fire-resistance rating.

**Exceptions:**

1. In buildings protected throughout by an approved, supervised automatic sprinkler system in accordance with Sections 901.6 and 903.3.1.1 corridor walls shall not be required to be rated, provided that such walls form smoke partitions in accordance with Section 710.

2. Where the corridor ceiling is an assembly having an 1-hour fire-resistance rating where tested as a wall, the corridor walls shall be permitted to terminate at the corridor ceiling.

3. Lavatories in unsprinklered buildings shall not be required to be separated from corridors, provided that they are separated from all other spaces by walls having not less than a 1-hour fire-resistance rating in accordance with Section 709.

4. Lavatories shall not be required to be separated from corridors, provided the building is protected throughout by an approved, supervised automatic sprinkler system in accordance with Sections 901.6 and 903.3.1.1.

**466.9 Flexible plan and open plan buildings.** Flexible plan and open plan buildings shall comply with the requirements of this chapter as modified as follows:

**466.9.1** Each room occupied by more than 300 persons shall have two or more means of egress entering into separate atmospheres. Where three or more means of egress are required, not more than two of them shall enter into a common atmosphere.

**466.9.2** Flexible plan buildings shall be evaluated while all folding walls are extended and in use as well as when they are in the retracted position.

**466.10 Day care homes.**

**466.10.1** This section establishes life safety requirements for day care homes in which more than three but not more than 12 clients receive care, maintenance and supervision by other than their relative(s) or legal guardian(s) for less than 24 hours per day.

**Exception:** Facilities that supervise clients on a temporary basis with a parent or guardian in close proximity.

**466.10.2 Definitions.** For definitions, see Chapter 2.

**466.10.3** Places of religious worship shall not be required to meet the provisions of this section in order to operate a nursery while services are being held in the building.

**466.10.4** Occupancies that include part-day preschools, kindergartens and other schools whose purpose is primarily educational even though the children are of preschool age shall comply with the provisions for Group E occupancy.

**466.10.5 Smoke detection systems.**

**466.10.5.1** Single-station smoke alarms installed in accordance with the household fire warning equipment requirements of Chapter 2 of NFPA 72 shall be installed within day care homes.

**Exception:** System smoke detectors installed in accordance with NFPA 72 and arranged to function in the same manner shall be permitted.

**466.10.5.2** Where the day care home is located within a building of another occupancy, any corridors serving the day care home shall be provided with a complete smoke detection system installed in accordance with NFPA 72.

**466.10.5.3** Single-station smoke alarms shall be powered by the building electrical system.

**466.10.5.4** Single-station smoke alarms shall be provided in all rooms used for sleeping.

**466.10.5.5** Where two or more smoke alarms are required within a living unit, suite of rooms, or similar area, they shall be arranged so that operation of any smoke alarm shall cause all smoke alarms within the living unit, suite of rooms or similar area to sound.

**466.10.5.5.1** The alarms shall sound only within an individual living unit, suite of rooms or similar area and shall not actuate the building fire alarm system. Remote annunciation shall be permitted.

**Florida Specific Amendment**

***Section 467 – Hospice Inpatient Facilities and Units and Hospice Residences***

***Add Florida specific requirements from Section 437 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 467**

**HOSPICE INPATIENT FACILITIES AND**

**UNITS AND HOSPICE RESIDENCES**

**467.1 Scope.** All hospice inpatient facilities and units and residences shall comply with the following design and construction standards. Enforcement and interpretation of these provisions shall be by the state agency authorized by Section 553.73, *Florida Statutes*.

**Note:** Other administrative and programmatic provisions may apply. See Department of Elder Affairs (DOEA) Rule 58A-2, *Florida Administrative Code*, Agency for Health Care Administration (AHCA) Rule 59C-1, *Florida Administrative Code*, and Chapter 400 Part VI, *Florida Statutes*.

**467.2 Physical plant requirements (inpatient facility and unit**).

**467.2.1** As used in this rule, "inpatient facility and unit" means the location where inpatient services are provided to hospice patients that are in need of hospice inpatient care.

**467.2.2 Codes and standards.**

**467.2.2.1** All new inpatient units and facilities, and additions or renovations to existing units and facilities shall be in compliance with the requirements for:

1. Institutional Occupancy - Group I-2, as described in Section 308.3 of this code; and

2. The National Fire Protection Association Life Safety Code 101, Chapter 18, New Health Care Occupancy, as described in Rule 69A-3.012, *F.A.C*., Standards of the National Fire Protection Association and incorporated by reference in Rule 69A-3.012, F.A.C.

**467.2.2.2** Inpatient sleeping rooms shall be made accessible in accordance with the requirements of the *Florida Building Code*, *Accessibility.*

**467.2.2.3** In renovations and additions to existing facilities, only that portion of the total facility affected by the project must comply with applicable sections of the codes for new facilities and units.

**467.2.2.4** Existing portions of the facility that are not included in the renovation or addition but are essential to the functioning of the complete facility, as well as existing areas which receive less than substantial amounts of new work, shall comply with the applicable sections of the codes for existing inpatient facilities and units.

**467.2.2.5** All existing inpatient facilities and units licensed by the Agency for Health Care Administration shall be in compliance with *National Fire Protection Association Life Safety Code 101*, Chapter 19, *Existing Health Care Occupancy*, and incorporated by reference in Rule 69A-3.012, *F.A.C*.

**467.2.3 Construction requirements.** The following shall be provided in each inpatient facility and unit:

**467.2.3.1** Each patient sleeping room shall have a minimum room area exclusive of toilet room, or permanently attached or built in closets, lockers or wardrobes, of 100 square feet (9.29 m2) per bed for private rooms and 80 square feet (7.70 m2) per bed for double occupancy rooms.

**467.2.3.2** Each patient sleeping room shall have a window or door with a clear glass light in compliance with Section 1205.2 of the *Florida Building Code.* The window or door shall open directly to an atrium or to the outside of the building with a minimum of 20 feet (6.10 m) in clear and unobstructed vista measured perpendicularly from the window or door.

**467.2.3.3** Each patient sleeping room shall have a wardrobe, locker or closet suitable for hanging clothing of the patient.

**467.2.3.4** Other than a patient sleeping room located in a hospital or nursing home, each patient sleeping room shall have access to a toilet room without having to enter the general corridor area. One toilet room shall serve no more than four beds and no more than two resident rooms. The door shall be side hinged, swing out from the toilet room, and unless otherwise required by this code, be at least 32 inches (813 mm) wide. The toilet room shall contain a water closet with grab bars on both sides and an emergency nurse call station. The water closet shall be equipped with a bedpan-rinsing device.

**467.2.3.5** A hand washing facility shall be provided within each patient toilet room or within each patient bedroom.

**467.2.3.6** A nurses' station, clean workroom and soiled workroom shall be provided. Access to these rooms shall be from a corridor or ante room.

**467.2.3.7** A charting space for clinical staff shall be provided at each nurses' station.

**467.2.3.8** A hand washing facility shall be located in or near each nurses' station.

**467.2.3.9** The clean workroom shall be provided with a work counter, hand wash facility, storage facilities and covered waste receptacle.

**467.2.3.10** The soiled workroom shall be provided with a service sink equipped with rinsing device, work counter, a hand-washing facility, storage facilities, covered waste receptacle and covered linen receptacle.

**467.2.3.11** A drug distribution system shall be provided with provisions for the locked storage of medications. Nothing in this section shall prohibit the use of the clean workroom for drug distribution.

**467.2.3.12** A clean linen storage room or closet shall be provided.

**467.2.3.13** A nourishment station with equipment for preparing or serving nourishments between scheduled meals shall be provided and shall be available for patient, family, volunteers, guests and staff use. Provisions shall be made for the use and storage of small appliances such as coffee makers or toasters. A minimum of two duplex receptacles connected to a small appliance circuit shall be provided.

**467.2.3.14** A nurse calling system accessible by the patient shall be provided.

**467.2.3.15** Storage for administrative supplies shall be provided.

**467.2.3.16** Parking for stretchers and wheelchairs in an area out of the path of normal traffic and of adequate size for the unit shall be provided.

**467.2.3.17** A janitor's closet with a floor drain and storage space for housekeeping equipment and supplies shall be provided.

**467.2.3.18** A multipurpose lounge suitable and furnished for reception, recreation, dining, visitation, group social activities and worship shall be provided.

**467.2.3.19** A conference or consultation room for patient and family use shall be provided.

**467.2.3.20** A washer and dryer for patients' personal use shall be provided.

**467.2.4 Details.**

**467.2.4.1** Fixtures, such as drinking fountains, public telephone, vending machines and portable equipment, shall not be located or stored so as to restrict corridor traffic or reduce the minimum required corridor width.

**467.2.4.2** Doors to patient tub rooms, showers and water closets that swing into the room shall be equipped with reversible hardware that will allow the door to swing out in an emergency.

**467.2.4.3** Doors, except those to closets or spaces not subject to occupancy, shall not swing into the exit access corridors.

**467.2.4.4** Windows and outer doors, if used for ventilation, shall be equipped with insect screens.

**467.2.4.5** Interior thresholds and expansion joint covers shall be made flush with the floor surface.

**467.2.4.6** Grab bars shall be provided at all patient toilets, showers, and tubs. The bars shall have a clearance of 1 ½ inches (38 mm) to the walls and shall be sufficiently anchored to sustain a concentrated applied load of not less than 250 pounds (113 kg).

**467.2.4.7** Single paper towel dispensers, soap dispensers and covered waste receptacles shall be provided at all hand washing facilities.

**467.2.4.8** Staff hand washing facilities shall be fitted with wrist blades and a gooseneck type spout.

**467.2.4.9** All hand washing facilities shall be securely anchored to withstand an applied vertical load of not less than two hundred and fifty pounds on the front of the fixture.

**467.2.5 Elevators.** In new multistory units and facilities an elevator shall be provided in compliance with the requirements of Chapter 30 of the *Florida Building Code, Building*. In addition, a hospital-type elevator large enough to accommodate a bed and attending staff shall service all patient sleeping rooms and patient treatment areas located above the ground floor. The car shall be at least 5 feet 8 inches (1.73 m) wide by 9 feet (2.74 m) deep and the car doors shall have a clear opening of not less than 4 feet (1.22 m) wide and 7 feet (2.13 m) high.

**467.2.6 Mechanical system requirements.**

**467.2.6.1 Air conditioning, heating and ventilating systems.**

1. All patient occupied areas shall be heated or cooled by individual or central units. Heating units shall be designed to provide a minimum of 72°F (22.22°C) ambient indoor temperature and air conditioning units shall be designed to provide a minimum of 78°F (25.55°C) ambient indoor temperature.

2. All air-supply and air-exhaust systems shall be mechanically operated. Fans serving exhaust systems shall be located at the discharge end of the system.

**467.2.6.1.1 Carbon monoxide detector**. See Section 916.1.

**467.2.6.2 Plumbing and other piping systems**. Water distribution systems shall be arranged to provide hot water at each hot water outlet at all times. Hot water at shower, bathing, and hand washing facilities for patients' personal use shall not exceed 110°F (43.3°C).

**467.2.7 Electrical system requirements.**

**467.2.7.1 Lighting**.

1. All spaces occupied by people, machinery, and equipment within the building, approaches to building, and parking areas shall have electric lighting.

2. All patients' rooms shall have general lighting and night lighting. General room luminaries shall be switched at the entrance to the patient room.

**467.2.7.2 Receptacles.** All patient rooms shall have hospital grade duplex grounding type receptacles.

**467.2.8 Emergency electrical system.**

**467.2.8.1** A Type III essential electrical system shall be provided in all hospice facilities as described in National Fire Protection Association Life Safety Code 99, "Health Care Facilities", and incorporated by reference in Rule 69A-3.012, *F.A.C.* The emergency power for this system shall meet the requirements of a LevelII, type 10, Class 48 generator as described in National Fire Protection Association Life Safety Code 110, "Emergency Standby Power Systems", and incorporated by reference in Rule 69A-3.012, *F.A.C*.

**467.2.8.2** In new construction, the normal main service equipment shall be separated from the emergency distribution equipment by locating it in a separate room. Transfer switches shall be considered emergency distribution equipment for this purpose.

**467.2.8.3** Switches for critical branch lighting shall be completely separate from normal switching. The devices or cover plates shall be of a distinctive color. Critical branch switches are permitted to be adjacent to normal switches. Switches for life safety lighting are not permitted except as required for dusk-to-dawn automatic control of exterior lighting fixtures.

**467.2.8.4** There shall be selected life safety lighting provided at a minimum of 1 footcandle and designed for automatic dusk-to-dawn operation along the travel paths from the exits to the public way or to safe areas located a minimum of 30 feet (9.14 m) from the building.

**467.2.8.5** A minimum of one elevator per bank serving any patient use floor shall be connected to the equipment branch of the essential electric system and arranged for manual or automatic operation during loss of normal power. Elevator cab lighting, controls, and communication and signal systems shall be connected to the life safety branch.

**467.2.8.6** There shall be a dedicated low-fuel alarm for the day tank supplying the emergency generator driver. A manual pump shall also be provided for the day tank. The alarm shall be located at the generator derangement panel.

**467.2.8.7** Transfer switch contacts shall be of the open type and shall be accessible for inspection and replacement.

**467.2.8.8** If required by the facility's emergency food plan, there shall be power connected to the equipment branch of the essential electrical system for kitchen refrigerators, freezers and range hood exhaust fans. Selected lighting within the kitchen and dry storage areas shall be connected to the critical branch of the essential electrical system.

**467.3 Residential units.**

**467.3.1** Residential units shall comply with the *Florida Building Code* and the National Fire Protection Association Life Safety Code 101 as adopted by the *Florida Fire Prevention Code*.

**467.3.2** Residential units shall comply with the following codes and standards:

**467.3.2.1** All new facilities and additions and renovations to existing facilities shall be in compliance with:

1. Section 310.1 of this code for Group R-4 occupancy;

2. The National Fire Protection Association Life Safety Code 101, Chapter 32, Residential Board and Care Occupancy and incorporated by reference in Rule 69A-3.012, *F.A.C*., and

3. The *Florida Building Code, Accessibility*.

**467.3.2.2** All existing facilities shall comply with National Fire Protection Association Life Safety Code 101, Chapter 33, Residential Board and Care Occupancy and incorporated by reference in Rule 69A-3.012*, F.A.C*.

***Section 468 –Schools, Colleges and Universities.***

***Add Florida specific requirements from Section 443 of the 2010 Florida Building Code, Building to read as shown:***

**SECTION 468**

**SCHOOLS, COLLEGES AND UNIVERSITIES**

**468.1 Scope:** Florida’s public and private schools, colleges, and universities shall comply with all applicable requirements of the code and the following standards. These are minimum standards; boards or owners may impose more restrictive requirements. Additional requirements for public educational facilities in Florida, including public schools and Florida’s colleges, are found in Section 453, State Requirements for Educational Facilities.

**468.2 Sites**

**468.2.1 Drainage.** Soil, grass, and planting beds shall provide positive drainage away from sidewalks, but shall not fall away at more than a 3-percent gradient slope for a minimum distance of 5 feet (1524 mm) from the edge.

**468.2.2 Playgrounds and Equipment.** Playgrounds and equipment shall be safe, structurally sound, verminproof, and shall not have jagged or sharp projections. Playground equipment shall be anchored to suitable foundations to prevent toppling or dislodgement. Cushioning materials such as mats, wood chips, or sand shall be used under climbing equipment, slides, and swings.

**468.2.3 Outdoor waste containers.** A smooth nonabsorbent surface shall be provided for outdoor waste containers.

**468.3 Building Construction**

**468.3.1 Rodent proofing.** Buildings for Group E occupancies shall be rodent proofed per Appendix F, Rodent proofing.

**468.3.2 Glare from natural light.** Sources of natural light in instructional spaces shall be glazed with glare reducing materials or shall be shielded to prevent glare that can interfere with seeing task within the instructional space.

**468.3.3 Automated external defibrillator.** Automated external defibrillators shall be provided in public educational facilities that are a member of the Florida High School Athletic Association.

**468.3.4 Diaper changing stations.** A diaper changing station shall be located in or adjacent to any classroom where children wearing diapers are in attendance. A hand washing lavatory shall be provided within the changing station area. Access shall be provided to the lavatory without opening doors or touching a handle.

**468.3.5 Plumbing**

**468.3.5.1 Standards.** Educational and ancillary facilities shall be provided with toilets, hand washing facilities, and drinking fountains for all occupants, in ratios and accessible as required by the *Florida Building Code, Florida* law, and federal requirements.

**Exception:** A single unisex toilet room is allowed where provided in child care, pre-kindergarten through grade 3 and ESE classrooms.

**468.3.5.2 Teacher toilets.** Faculty and staff toilets shall be separate from student toilets.

**Exception:** Separation of faculty/staff and student toilet facilities is not required for colleges and universities.

**468.3.5.3 Toilet room access.**

**468.3.5.3.1** Toilet facilities for Pre-K through Grade 12 shall be accessible under continuous roof cover from all student occupied spaces.

**Exception:** Relocatable classrooms installed for temporary use.

**468.3.5.3.2 Access to group toilet rooms.** Access to student group toilet rooms shall not be through an occupied space, storage space, or equipment space.

**468.3.5.4 Shielding device.** The entry to each group toilet room shall be provided with a door, partition, or other shielding device to block from view the occupants in the toilet room. If a door is provided, it shall have a closer and shall swing out in the direction of egress.

**468.3.5.5 Walls.** Walls in toilet rooms shall be impervious to a height of at least 4 feet (1219 mm) above the floor. Walls in kitchens, sculleries, can wash areas, and shower rooms shall be impervious to a height of at least 6 feet (1829 mm) above the floor. Toilet and shower partitions shall be impervious.

**468.3.5.6 Floor drains and hose bibbs.** All group toilet rooms shall be provided with at least one floor drain and one easily accessible hose bibb. The floor shall be sloped down to the drain.

**468.3.5.7 Handwashing facilities.**

**468.3.5.7.1** Handwashing facilities shall be located within or adjoining each toilet room.

**468.3.5.7.2** Soap dispensers for liquid, foam, or powdered soap shall be provided at all handwashing basins.

**468.3.5.7.3** Individual towel dispensers or hot-air hand drying devices shall be provided near handwashing basins.

**468.3.5.8 Showers**

**468.3.5.8.1** Shower heads shall be based on the peak load to be accommodated at one time and provided at the ratio of one shower head for each five students, located a minimum of 30 inches (762 mm) apart.

**468.3.5.8.2** Floors shall be drained in such a manner that waste water from any shower head will not pass over areas occupied by other bathers.

**468.3.5.8.3** Water shall be heated and the temperature at the shower head shall not exceed 110°F (43°C) nor be less than 95°F (35°C).

**468.3.6 Mechanical**

**468.3.6.1 Natural ventilation.** Natural ventilation shall not be provided in toilet rooms, shower rooms, lockers rooms, and storage rooms for athletic equipment or soiled clothes.

**468.3.6.2 Fans and blowers.** Fans and blowers shall be sized and designed to provide the required air movement without excessive or disturbing noise that would interfere with the educational program provided in the space being ventilated.

**468.3.6.3 Kilns.** Kiln rooms and areas shall be provided with adequate exhaust to dispel emitted heat to the exterior, and they shall not be connected to any other exhaust system.

**468.3.6.4 Chemistry laboratories and science classrooms.** HVAC systems in chemistry labs and science classrooms shall be designed and installed to ensure that chemicals originating from the space are not recirculated.

**Exception:** A high capacity emergency exhaust system providing twenty (20) air changes per hour may be used in chemistry laboratories and science classrooms with fume hoods. Positive ventilation may be provided via doors or windows opening to the exterior. Signs providing operational instructions shall be permanently installed at the emergency exhaust system fan switch and adjacent to the door(s) or window(s) to be opened.

**468.3.6.5 Chemical storage.** Rooms used for the storage, handling, and disposal of chemicals used in school, college, and university laboratories shall be vented to the exterior. The ventilation system shall not be connected to the air-conditioning return air system, and the rooms shall be kept at moderate temperatures. Chemical storage cabinets, when vented to the exterior, shall be mechanically vented in accordance with NFPA 30 and NFPA 91.

**468.3.7 Lighting.**

**468.3.7.1 Illumination level in classrooms/instructional spaces.**  Illumination at the normal task level for the type of classroom/instruction space shall be a minimum of forty (40) foot-candles (400 Lux).

**468.3.7.2 Illumination uniformity in classrooms/instruction spaces.**Luminaries shall have a ceiling arrangement or positioned around the walls such that a uniformed illumination level, within ten (10) foot-candles (100 Lux), is maintained at the students required normal task level for the type of classroom/instruction space.

**468.3.7.3 Brightness Ratio in classrooms/instructional spaces.**The brightness ratio between the student task level and the instruction area or areas or visual display location shall be one (1) to five (5) or less.

**468.3.7.4 Illumination failure of general and means of egress luminaries.**Illumination systems shall be designed and maintained so that the failure of any single lighting unit, such as an electric luminary, does not leave any occupied space or means of egress in the dark. (See *FBC* 1006 for additional means of egress requirements.)

**468.3.7.5 Glare elimination.** Illumination of permanently installed markerboards, chalkboards, and other instruction aids shall be designed to eliminate glare and shadows.

***Section 469 – Office Surgery Suite***

***Add Section 469 to read as shown:***

**SECTION 469**

**OFFICE SURGERY SUITE**

**469.1 Scope.** An office surgery suite is that portion of a physician’s office where surgery is performed according to 64B-8-9009 Standard of Care for Office Surgery.  These minimum standards of design and construction apply to a physician’s office required to register under 64B8-9009.(1)(a).

**469.1.1** The minimum standards of design, construction and specified minimum essential utilities and facilities of this section shall be applicable to the all office surgery suites that are required to be registered but have not yet been registered with the Florida Department of Health in accordance with Florida Administrative Code 64B8-9.0091 Requirement for Physician Office Registration; Inspection or Accreditation, and to all newly constructed office surgery suites, and all additions, alterations or renovations to all existing office surgery suites on the effective date of this code.

**469.2 Codes and Standards.**

**469.2.1** In addition to the minimum requirements of this section, an office surgery suite shall also be in compliance with the following:

**469.2.1.1** The fire codes as described in Chapter 69A-3.012, “Standards of the National Fire Protection Association Adopted,” *Florida Administrative Code.*

**469.2.1.2** Part I of The *Guidelines for Design and Construction of Health Care Facilities* (*The Guidelines*), as referenced in Chapter 35 of this code.

**469.3 Office Surgery Suite Occupancy Classification**.

**469.3.1** Office surgery suites, that provide services or treatment, on an outpatient basis, to four or more patients at the same time that either renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance from others or that provide surgical treatment requiring general anesthesia to four or more patients at the same time, shall meet the requirements of Ambulatory Health Care Occupancies as described in NFPA 101, Life Safety Code and this code.

**469.3.2** All other office surgery suites shall comply with the requirements of Business occupancy as described in NFPA 101, Life Safety Code, and this code.

**469.4 Physical Plant Standards.**

**469.4.1 Administration and Public Areas.** There shall be a waiting room or lobby area of sufficient size to accommodate patients and visitors.

**469.4.1.1** There shall be a public toilet(s) with hand-washing station(s), public access to a telephone for local calls, and an electric water fountain or a water and cup-dispensing unit. When the office surgery suite is located within an office building, these functions may be provided as part of the office building's public areas.

**469.4.1.2** As determined by the functional program of the office surgery suite, there shall be an admitting office, secure medical record storage, director of nursing office, in-service training or conference area.

**469.4.1.3** There shall be a toilet room(s) with hand-washing station located within the office surgery suite for patients.

**469.4.2 Pre-Operative Area(s).**

**469.4.2.1** As determined by the functional program of the office surgery suite the following elements shall be provided for clinical services:

**469.4.2.2** Patient change areas. An area(s) shall be provided for patients to change from street clothing into surgical gowns and to prepare for surgery. Provisions shall be made for patient privacy and for securing patients' personal effects.

**469.4.2.3** A separate and distinct primary recovery area(s) shall be provided that is located adjacent to the operating room(s). It shall contain a minimum of one (1) Pre-Operative station per each operating room and shall not be part of the restricted area of the office surgery suite. There shall be 3 feet (.914 meter) of clear floor area around three sides of each recovery station for work and circulation.

**469.4.2.4** The Pre-Operative area(s) shall be located in direct view of a nurse station.

**469.4.2.5** Cubicle curtains or other provisions for privacy during Pre-Operative care shall be provided.

**469.4.2.6** There shall be a dedicated hand-washing station located in or immediately adjacent to the Pre-Operative area(s).

**469.4.2.7** If determined by the functional program taking into consideration the types of surgery and procedures performed, the types of anesthesia used, average recovery periods, and staffing levels, this area may be shared with the Post-Operative Area.

**469.4.3 Operating Room(s).**

**469.4.3.1** There shall be at a minimum one operating room in each office surgery suite. The size and location of the operating room(s) shall be dependent on the level of care provided and equipment utilized based on the functional program.

**469.4.3.2** The size of the operating room(s) shall be as defined by the American College of Surgeons Classes as adapted from the American College of Surgeons publication 04GR-0001: *Guidelines for Optimal Ambulatory Surgical Care and Office-Based Surgery*, which was developed by the Board of Governors Committee on Ambulatory Surgical Care and published in May 2000.

**469.4.3.2.1 Class A:** To be used for Level I Office Surgery as defined 64B8-9.009.

**469.4.3.2.1.1** Class A operating rooms shall have a minimum clear floor area of 150 square feet (45.72 square meters) with a minimum clear dimension of 12 feet (3.65 meters).

**469.4.3.2.1.2** There shall be a minimum clear distance of 3 feet 6 inches (1.07 meters) at each side, the head, and the foot of the operating table.

**469.4.3.2.2 Class B:** To be used for Levels I, II and IIA Office Surgery as defined in 64B8-9.009.

**469.4.3.2.2.1** Class B operating rooms shall have a minimum clear dimension of 15 feet (4.57 meters).

**469.4.3.2.2.2** Room arrangement shall permit a minimum clear dimension floor area of 250 square feet (23.23 square meters) with a minimum of 3 feet 6 inches (1.07 meters) at each side, the head, and the foot of the operating table.

**469.4.3.2.3** Class C: To be used for Levels I, II, IIA and III Office Surgery as defined in 64B8-9.009.

**469.4.3.2.3.1** Class C~~: These~~ operating rooms shall have a minimum clear floor area of 400 square feet (37.16 square meters) and a minimum clear dimension of 18 feet (5.49 meters).

**469.4.3.2.3.2** Room arrangement shall permit a minimum clear dimension of 4 feet (1.22 meters) at each side, the head, and the foot of the operating table.

**469.4.3.3** The Class B and C operating room(s) shall be located within the semi-restricted area of the within the office surgery suite.

**469.4.3.4** The operating room(s) shall be equipped with an emergency communication system connected to at least one continuously occupied location within the office surgery suite such as a control or nurse station.

**469.4.4 Post-Operative Area(s).**

**469.4.4.1** Area(s) for recovery in office surgery suites shall be provided in accordance with the functional program with the following minimum requirements:

**469.4.4.2** A separate and distinct primary recovery area(s) shall be provided that is located within or adjacent to the operating room(s). It shall contain a minimum of one (1) recovery station per each operating room and shall not be part of the restricted area of the office surgery suite. There shall be 3 feet (.914 meter) of clear floor area around three sides of each recovery station for work and circulation.

**469.4.4.3** The recovery area shall be located in direct view of the nurse station.

**469.4.4.4** Cubicle curtains or other provisions for privacy during post-operative care shall be provided.

**469.4.4.5** There shall be a dedicated hand-washing station located in or immediately adjacent to the recovery area(s).

**469.4.5 Step-Down Recovery Area(s).**

**469.4.5.1** As required by the functional program, a designated supervised step-down recovery area may be provided for patients who do not require post-anesthesia recovery but need additional time for their vital signs to stabilize before safely leaving the office surgery suite. This area shall contain a clinical workspace, space for family members, and provisions for privacy. It shall have convenient patient access to toilets large enough to accommodate a patient and an assistant. Hand-washing stations and nourishment facilities shall be included within or immediately adjacent to this area(s).

**469.4.6 Surgical Service Areas.** The following areas and spaces shall be provided.

**469.4.6.1 Control station.** As determined by the office surgery suite, a control station located to permit visual surveillance of all traffic entering the restricted corridor (access to operating rooms and other ancillary clean/sterile areas) shall be provided.

**469.4.6.2 Drug distribution station.** Provisions shall be made for storage and preparation of medications administered to patients. A refrigerator for pharmaceuticals and a double-locked storage for controlled substances shall be provided.

**469.4.6.3 Scrub station(s).** Scrub station(s) shall be provided outside of and near the entrance to each operating room and may service two operating rooms if needed. Scrub station(s) shall be arranged to minimize incidental splatter on nearby personnel or supply carts. The scrub stations shall be trimmed with foot, knee, or ultrasonic controls (no single lever wrist blades).

**469.4.6.4 Soiled workroom.** The soiled workroom shall contain a hand-washing station, a sink large enough to accommodate the cleaning of the largest piece of surgical instrument utilized in the operating room, a work counter, and waste receptacle(s). This may be the same workroom as described in Section 469.4.7, “Sterilizing Facilities”.

**469.4.6.5 Fluid waste disposal station(s).** This station(s) shall be convenient to the general operating room(s) and post-anesthesia recovery area(s). A clinical sink or toilet equipped with a rinsing device may meet this requirement.

**469.4.6.6 Anesthesia Equipment and Supplies.** As required by the functional program, provisions shall be made for cleaning, testing, and storing anesthesia equipment and supplies.

**469.4.6.7 Medical Gas Storage.** Medical gas storage with space for reserve nitrous oxide and oxygen cylinders, if such gas is used in the office surgery suite, shall be provided and located outside of the restricted surgical area(s). Service and delivery access shall be possible without entering the restricted surgical area(s). All cylinders shall be securely chained or fastened to prevent accidental damage.

**469.4.6.8 General storage room(s).** General, surgical and equipment storage room(s) or closet enclosures shall be provided for equipment and supplies used or required in the surgical suite.

**469.4.6.9 Staff clothing change area(s).** A minimum of one (1) change area shall be provided for staff working within the office surgery suite. This area(s) shall contain locker(s), toilet(s), hand-washing station(s), and space for donning scrub attire.

**469.4.6.10 Patient change areas.** An area shall be provided for patients to change from street clothing into surgical gowns and to prepare for surgery. Provisions shall be made for patient privacy and for securing patients' personal effects.

**469.4.6.11 Stretcher/wheelchair storage area.** This area shall be convenient for use and out of the required exit access.

**469.4.6.12** **Lounge and toilet facilities.** Lounge and toilet facilities with hand-washing station for staff shall be provided as required by the functional program.

**469.4.6.13 Nourishment Room or Area.** For office surgery suites that provide accommodations for overnight stays, a nourishment room or area shall be provided. It shall contain a refrigerator, double compartment sink, counter, and storage for food items and utensils.

**469.4.6.14 Housekeeping room.** A room containing a floor receptor or service sink shall be provided exclusively for the office surgery suite. Storage space for housekeeping supplies and equipment shall be provided in this room or in the general storage room(s). Hazardous supplies such as cleaning chemicals shall be protected in accordance with the requirements of the referenced fire safety codes.

**469.4.6.15 Crash/Anesthesia cart(s).** Space shall be provided for emergency resuscitation equipment and supplies such as crash/anesthesia cart(s) with convenient access to and use from both the surgery and recovery areas.

**469.4.7 Sterilizing Facilities.**

**469.4.7.1** A system for providing sterilized equipment and supplies shall be provided. When sterilization is provided off-site, adequate handling (receiving and distribution) and on-site storage of sterile supplies shall be accommodated, and shall meet the minimum requirements for sterilization performed on-site.

**469.4.7.2** Adequate space shall be available for the cleaning and sanitizing of clean and soiled carts and vehicles transporting supplies.

**469.4.7.3** If on-site processing facilities are provided they shall include the following:

**469.4.7.3.1 Soiled workroom.** This room shall be physically separated from all other areas of the office surgery suite. Workspace shall be provided to handle the cleaning and the gross cleaning, debridement, and disinfections of all medical/surgical instruments and equipment. The soiled workroom shall contain work surfaces(s), sink(s), flush-type devices(s), and washer/sterilizer decontaminators or other decontamination equipment as appropriate to the functional program.

**469.4.7.3.2 Clean/Assembly workroom.** This workroom shall have access to an immediately adjacent hand washing station and shall contain appropriate and sufficient workspace and equipment for terminal sterilizing of medical and surgical equipment and supplies. Clean and soiled work areas shall be physically separated. Access to sterilization room shall be restricted. The clean assembly room shall have adequate space for the designated number of work areas as defined in the functional program as well as space for storage of clean supplies, sterilizer carriages, and instrumentation.

**469.4.7.3.3 Clean/Sterile supplies.** Storage for packs, etc., shall include provisions for ventilation, humidity, and temperature control.

**469.4.8 Details and Finishes.**

**469.4.8.1** The minimum nominal door width for patient use shall be 3 feet (.9 meter) except doors requiring gurney/stretcher access, shall have a nominal width of 3 feet, 8 inches (1.11 meters).

**469.4.8.2** Toilet room doors for patient use shall open outward or be equipped with hardware that permits access from the outside in emergencies.

**469.4.8.3** Hand-washing stations shall be located and arranged to permit proper use and operation. Each hand-washing station shall be equipped with single service paper towel dispensers and a soap dispenser.

**469.4.8.4** Provisions for hand drying shall be included at all hand-washing stations except scrub stations. Hand drying shall be accomplished by single towel dispensers or electrical hand driers.

**469.4.8.5** Wall bases in operating rooms and areas that are frequently subject to wet cleaning shall be monolithic and coved directly up from the floor, tightly sealed to the wall, and constructed without voids. Seam welds in sheet flooring shall utilize manufacturer's weld product recommendations. Vinyl Composition Tile (VCT) shall not be used in these areas.

**469.4.8.6** Heavy ceiling mounted equipment such as operating room lights, tracks or other equipment shall have suspension systems specially designed for that application.

**469.4.8.7** Cubicle curtains and draperies designed for appropriate patient privacy shall be noncombustible or flame-retardant.

**469.4.8.8** Floors subject to continuous use while wet, such as showers areas, shall have a nonslip surface.

**469.4.8.9** Floor finishes in areas such as surgical suite, central sterile supply spaces, radiographic rooms, and minor surgical procedure rooms shall be washable, smooth, and capable of withstanding chemical cleaning.

**469.4.8.10** Wall finishes shall be washable and, in the proximity of plumbing fixtures, shall be smooth and moisture resistant.

**469.4.8.11** Wall finishes in areas such as operating suite, central sterile supply spaces, radiographic rooms, and minor surgical procedure rooms shall be washable, smooth, and capable of withstanding chemical cleaning.

**469.4.8.12** Wall finishes in operating room(s) shall be scrubbable, capable of withstanding harsh chemical cleaning, and monolithic.

**469.4.8.13** Ceiling finishes in semi restricted areas such as clean corridors, central sterile supply spaces, radiographic rooms, minor surgical procedure rooms and existing operating rooms shall be smooth, scrubbable, nonabsorptive, nonperforated, capable of withstanding cleaning with chemicals, and without crevices that can harbor mold and bacteria growth.

**469.4.8.14** Ceilings finishes in operating rooms shall be monolithic, scrubbable, and capable of withstanding chemicals. Ceiling access panels shall be provided as required.

**469.4.9 Elevators.**

**469.4.9.1** Installation and testing of elevators shall comply with ANSI/ASME A17.1 for new construction and ANSI/ASME A17.3 for existing facilities.

**469.4.9.2** At least one elevator car shall have a minimum inside car platform of 51x80 inches (1295x2032 mm) with a minimum clear opening width of 42 inches (1067mm) unless otherwise designed to provide equivalent space to allow the entrance and exit of an ambulance stretcher in the horizontal position. The elevator entrance may be of the side opening entrance type in order to accommodate a stretcher in its horizontal position. If more than one elevator is present, this elevator shall be identified.

**469.4.9.3** The elevator car to be used for emergency evacuation of patients shall derive its power from an emergency electrical system.

**469.4.9.4** Elevator call buttons and controls shall not be activated by heat or smoke. Light beams, if used for operating door reopening devices without touch, shall be used in combination with door-edge safety devices and shall be interconnected with a system of smoke detectors so that the light control feature will be overridden or disengaged should it encounter smoke at any landing.

**469.4.10 Waste Processing Services.**

**469.4.10.1** Storage and disposal. Facilities shall provide for sanitary storage and treatment or disposal of waste using techniques acceptable to the appropriate health and environmental authorities. The functional program shall stipulate the categories and volumes of waste for disposal and shall stipulate the methods of disposal for each.

**469.4.10.2** Medical waste. Medical waste shall be disposed of either by incineration or other approved technologies.

**469.4.11 Mechanical System Standards.**

**469.4.11.1 Medical Gas and Vacuum Standards.**

**469.4.11.1.1** If the functional program of the office surgery suite requires a medical gas system, it shall be a minimum a Level III piped medical gas system in accordance with NFPA 99. In lieu of a Level III piped oxygen system, anesthetizing equipment with a double yoke oxygen system is acceptable. If an anesthesia ventilator is planned to be used during the surgical procedure, then a Level III piped gas system shall be required.

**469.4.11.1.2** As required by the functional program of the office surgery suite, either a piped clinical vacuum system in accordance with NFPA 99 or portable electrical vacuum equipment shall be provided. In either case, there shall be a redundant vacuum system or equipment exclusively dedicated to the anesthetizing equipment.

**469.4.11.1.3** For piped systems, the number of station outlets shall meet the needs of the functional program. However, the minimum number of station outlets shall be as described in Table 2.

**469.4.11.1.4** All piping, except control-line tubing, shall be identified. All valves shall be tagged, and a valve schedule shall be provided to the office surgery suite owner for permanent record and reference.

**469.4.11.1.5** All gas cylinders in service and in storage shall be individually secured and located to prevent falling or being knocked over.

***Change Section 469.4.12 to read as shown:***

**469.4.12 ~~Air Conditioning, Heating, and Ventilation Systems~~ Heating, Ventilation, and Air Conditioning (HVAC).**

**469.4.12.1** All rooms and areas in the office surgery suite used for patient care shall be required to have HVAC systems as described in this section and as described for similar rooms and areas in *the 2010 edition of the Guidelines for the Design and Construction of Health Care Facilities,* Part 6, ANSI/ASHRAE/ASHE Standard 170-2008, *Ventilation of Health Care Facilities .* ~~Have provisions for ventilation. The ventilation rates shown in Table 1 shall be used only as minimum standards; they do not preclude the use of higher, more appropriate rates.~~

**469.4.12.2** Fans serving exhaust systems shall be located at the discharge end and shall be readily serviceable. Air supply and exhaust in rooms for which no minimum total air change rate is noted may vary down to zero in response to room load.

**~~469.4.12.3~~** ~~For rooms listed in Table 1, where Variable Air Volume (VAV) systems are used, minimum total air change shall be within limits noted and shall maintain the relative pressures indicated throughout the entire range of operation.~~

**~~469.4.12.4~~** ~~To maintain asepsis control, airflow supply and exhaust should generally be controlled to ensure movement of air from "clean" to "less clean" areas.~~

**469.4.12.~~5~~ 3** The outdoor air introduced through the VAV air handling unit(s) shall remain constant throughout the range of operation.

**469.4.12.~~6~~ 4** Exhaust outlets, piping and ductwork shall be permanently and clearly identified.

**~~469.4.12.7~~** ~~Air supply for operating rooms shall be from ceiling outlets near the center of the work area and return air openings shall be near the floor level.~~

**~~469.4.12.8~~** ~~Temperature shall be individually controlled for each operating room. During unoccupied hours, operating room air change rates may be reduced, provided that the positive room pressure is maintained and the direction of the air movement remains the same.~~

**~~469.4.12.9~~** ~~Operating room ventilation systems shall operate at all times, except during maintenance and conditions requiring shutdown by the building’s fire alarm system.~~

**~~469.4.12.10~~** ~~Air quantity calculations must account for filter loading such that the indicated air change rates are provided up until the time of filter change-out.~~

**~~469.4.12.11~~** ~~Exhaust grilles for anesthesia evacuation and other special applications shall be permitted to be installed in the ceiling.~~

**~~469.4.12.12~~** ~~Each space routinely used for administering inhalation anesthesia and inhalation analgesia shall be served by a scavenging system to vent waste gases. If a vacuum system is used, the gas-collecting system shall be arranged so that it does not disturb patients' respiratory systems. Gases from the scavenging system shall be exhausted directly to the outside.~~

**~~469.4.12.13~~** ~~The anesthesia evacuation system may be combined with the room exhaust system, provided that the part used for anesthesia gas scavenging exhausts directly to the outside and is not part of the recirculation system.~~

**~~469.4.12.14~~** ~~All central ventilation or air conditioning systems shall be equipped with filters with efficiencies equal to, or greater than, those specified in Table 3. Where two filter beds are required, filter bed no. 1 shall be located upstream of the air conditioning equipment and filter bed no. 2 shall be downstream of any fan or blowers.~~

**469.4.13 Plumbing Systems.**

**469.4.13.1** The material used for plumbing fixtures shall be nonabsorptive and acid-resistant.

**469.4.13.2** Water spouts for staff use in lavatories and sinks shall have the discharge point a minimum of 5 inches above the rim of the fixture.

**469.4.13.3** General hand-washing stations used by staff shall be trimmed with valves that can be operated without hands. (Single lever or wrist blade devices may be used.) Blade handles used for this purpose shall be not less than 3-1/2 inches (88.90 millimeters) nor exceed 4-1/2 inches (114.30 millimeters) in length. If clinical sinks are utilized, handles on clinical sinks shall be at least 6 inches (152.40 millimeters) long.

**469.4.13.4** The water-heating system shall have sufficient supply capacity to deliver at the temperatures of between 105-120 degrees F. Water temperature is measured at the point of use or inlet to the equipment. Water shall be permitted to be stored at higher temperatures.

**469.4.13.5** Drain lines from sinks used for acid waste disposal shall be made of acid-resistant material.

**469.4.13.6** Drainage piping shall not be installed within the ceiling or exposed in operating rooms or other sensitive areas. If there is existing drainage piping from a floor directly above, special precautions such as safety drain pans shall be provided.

**469.4.13.7** Floor drains or sinks shall not be permitted in operating rooms.

**469.4.13.8** If a floor drain is installed in a cystoscopy room, it shall contain a nonsplash, horizontal-flow flushing bowl beneath the drain plate.

**469.4.13.9** Where plaster traps are used, provisions shall be made for appropriate access and cleaning.

**469.4.13.10** All piping, except control-line tubing, shall be identified. All valves shall be tagged, and a valve schedule shall be provided to the office surgery suite owner for permanent record and reference.

**469.4.14 Electrical Standards.**

**469.4.14.1** All electrical material and equipment, including conductors, controls, and signaling devices, shall be installed in compliance with applicable sections of NFPA 70 and NFPA 99 and shall be listed as complying with available standards of listing agencies, or other similar established standards where such standards are required.

**469.4.14.2** The electrical installations, including alarm and communication systems, shall be tested to demonstrate that equipment installation and operation is appropriate and functional.

**469.4.14.3 Services and Switchboards.**

**469.4.14.3.1** Main switchboards shall be located in an area separate from plumbing and mechanical equipment and shall be accessible to authorized persons only.

**469.4.14.3.2** Switchboards shall be convenient for use, readily accessible for maintenance, away from traffic lanes, and located in dry, ventilated spaces free of corrosive or explosive fumes, gases, or any flammable material. Overload protective devices shall operate properly in ambient room temperatures.

**469.4.14.4 Panelboards.**

**469.4.14.4.1** Panelboards serving normal lighting, appliance circuits and critical branch emergency circuits shall be located on the same floor as the circuits they serve. Panelboards serving Life Safety emergency circuits may be located on another floor and serve floors above and/or below.

**469.4.14.5 Lighting.**

**469.4.14.5.1** All occupied spaces shall have fixtures for lighting that can be illuminated as necessary.

**469.4.14.5.2** Each operating room shall have general lighting for the room in addition to local lighting provided by special lighting unit(s) at the surgical table.

**469.4.14.6 Receptacles (Convenience Outlets).**

**469.4.14.6.1** Duplex grounded-type receptacles shall be installed in all areas in sufficient quantities for tasks to be performed as needed.

**469.4.14.6.2** Each operating room, primary recover station shall have a minimum of three hospital grade duplex receptacles that shall be sufficient to connect all equipment and devices and that shall include one spare duplex receptacle.

**469.4.14.6.3** At least one of these receptacles shall be connected to the emergency system and one connected to the normal system. The emergency system receptacles shall be distinctively marked so as to be readily identified.

**469.4.14.6.4** There shall be no more than two duplex receptacles per circuit in these areas.

**469.4.14.6.5** Multiple outlet extenders shall not be permitted except electrical strips with full surge protectors may be utilized.

**469.4.14.7 Equipment.**

**469.4.14.7.1** At inhalation anesthetizing locations, all electrical equipment and devices, receptacles, and wiring shall comply with applicable sections of NFPA 99 and NFPA 70.

**469.4.14.8 Nurse Call System.**

**469.4.14.8.1** In facilities that contain more than one operating room and where recovery beds are not in direct view from the nurses’ station, the following nurses’ calling system shall be provided.

**469.4.14.8.2** Each recovery bed shall be provided with a call button. Two call buttons serving adjacent beds may be served by one calling station.

**469.4.14.8.3** Calls shall activate a visual and audible signal at the nurses’ or control station and in the clean workroom and soiled workroom. If voice circuits are provided, indicating lights shall be used and shall remain lighted as long as the voice circuit is operating.

**469.4.14.8.4** A nurses’ call emergency system shall be provided at each patient toilet and dressing room. Activation shall be by a pull cord that extends to near the floor. This system will activate audiovisual signals in the recovery room nurses’ station and in the surgical suite nurses’ station. The emergency call system shall be designed so that signal light activation will remain lighted until turned off at patient’s calling station.

**469.4.14.9 Emergency Electrical Service.**

**469.4.14.9.1** There shall be an emergency electrical service to provide power and light to the office surgery suite for a minimum period of two (2) hours as prescribed in 64B8-9.009. The system shall operate emergency exit lighting, fire alarm systems, nurses’ calling systems, surgical room lighting, recovery room lighting and shall power monitoring equipment, selected receptacles in the operating and recovery areas and medical refrigerator if provided.

**469.4.14.9.2** Power may be supplied by batteries or an emergency generator in accordance with NFPA 111 and NFPA 110 respectively.

**469.4.14.9.3** All office surgery suites shall at a minimum be equipped with a Type III non-portable, permanently installed emergency electrical system designed and installed in accordance with NFPA 99. New office surgery suites providing Level III surgical procedures as defined by the Board of Medicine should provide a Type I emergency electrical system in accordance with the requirements of NFPA 99.

**469.4.14.10 Fire Alarm System.**

**469.4.14.10.1** The fire alarm system shall be as required by NFPA 101, Life Safety Code, and installed per NFPA 72.

**Chapter 5 – General Building Heights and Areas**

***Section 505 – Mezzanines and Equipment Platforms. Change Section 505.2.1 to read as follows:***

**505.2.1 Area limitation.**(No Change)

**Exceptions:**

1. – 2. (No Change)

3.    In sprinklered Group S2 occupancies of Type III construction, the enclosed and unenclosed areas under mezzanines shall be allowed to be included when calculating the permissible size of mezzanines.

***Section 507 – Group E Buildings. Change Section 507.10 to read as shown:***

**507. 10 Group E buildings.**  The area of a Group E building no more than one *story above grade plane*, of Type II, IIIA or IV construction, shall not be limited provided all of the following criteria are met:

1. Each classroom shall have not less than two means of egress, with one of the means of egress being a direct exit to the outside of the building complying with Section 1020 or the building is provided with smoke barriers having a minimum 1-hour fire-resistance rating dividing the building into areas not to exceed 30,000 square feet (2,787 m2) in floor area.

2. – 3. (No change)

***Section 510 – Special Provisions. Change Section 510.4 to read as follows:***

**510.4 Parking beneath Group R.**  Where a maximum one-story above grade plane Group S-2 parking garage, enclosed or open, or combination thereof, of Type I construction or open of Type IV construction, with grade entrance, is provided under a building of Group R, the number of stories to be used in determining the minimum type of construction shall be measured from the floor above such a parking area. The number of stories to be used in determining the height in stories in accordance with Section 903.2.11.3 ~~903.6~~ shall include the parking garage as a story. The floor assembly between the parking garage and the Group R above shall comply with the type of construction required for the parking garage and shall also provide a fire-resistance rating not less than the mixed occupancy separation required in Section 508.4.

**Chapter 6 – Types of Construction**

(No Change)

**Chapter 7 – Fire and Smoke Protection Features**

***Section 706 – Fire Walls. Add Section 706.4.1 to read as follows:***

**706.4.1 Townhouse fire separation.**

**706.4.1.1**   Each townhouse shall be considered a separate building and shall be separated from adjoining townhouses by a party wall complying with Section 706.1.1 or by the use of separate exterior walls meeting the requirements of Tables 601 and 602 for zero clearance from property lines as required for the type of construction. Separate exterior walls shall include one of the following:

1. A parapet not less than 18 inches (457 mm) above the roof line.

2. Roof sheathing of noncombustible material or fire retardant treated wood, for not less than a 4 foot (1219 mm) width on each side of the exterior dividing wall.

3. One layer of 5/8 inch (15.9 mm) Type X gypsum board attached to the underside of roof decking, for not less than a 4 foot (1219 mm) width on each side of the exterior dividing wall.

**706.4.1.2**   When not more than three stories in height, townhouses may be separated by a single wall meeting the following requirements:

1. Such wall shall provide not less than a 2-hour fire-resistance rating. Plumbing, piping, ducts, electrical or other building services shall not be installed within or through the 2-hour wall, unless such materials and methods of penetration have been tested in accordance with Section 703.

2. Such wall shall be continuous from the foundation to the underside of no less than a 4-foot (1219 mm) width on each side of the wall shall be of noncombustible material, or fire-retardant-treated wood, or one layer of 5/8-inch (15.9 mm) Type X gypsum wallboard attached to the underside of the roof decking.

3. Each dwelling unit sharing such wall shall be designed and constructed to maintain its structural integrity independent of the unit on the opposite side of the wall.

**Exception**: Said wall may be penetrated by roof and floor structural members provided that the fire-resistance rating and the structural integrity of the wall is maintained.

***Section 709 – Smoke Barriers. Change Section 709.4 to read as follows:***

**709.4 Continuity.** (No Change)

**Exceptions:**

1-2 (No Change)

3. *Smoke barriers* used for areas of refuge in accordance with Section1007 ~~1007.6.2~~ are not required to extend from outside wall to outside wall.

**Chapter 8 – Interior Finishes**

(No Change)

**Chapter 9 – Fire Protection Systems**

***Section 901 – General. Change Section 901.1 to read as follows:***

**901.1 Scope.** The provisions of this chapter shall specify where *fire protection systems* are required and shall apply to the design, installation and operation of *fire protection systems* and carbon monoxide detection alarms.

***Section 903 – Automatic Sprinkler Systems. Change Section 903.2.3 to read as shown:***

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

1.– 2. (No change)

**Exception**: An automatic fire sprinkler system is not required in ~~any area below the lowest~~ *~~level of~~**~~exit~~**~~discharge~~* ~~serving that area where every classroom throughout the building has at least one exterior~~ *~~exit~~* ~~door at ground level.~~ existing educational buildings unless 50 percent of the aggregate area of the building is being remodeled.

***Section 903 – Automatic Sprinkler Systems. Change Section 903.2.11.3 to read as follows:***

**903.2.11.3 ~~Buildings over 55 feet in height.~~Buildings three stories or more in height.** ~~An~~ *~~automatic sprinkler system~~* ~~shall be installed throughout buildings with a floor level having an~~ *~~occupant load~~* ~~of 30 or more that is located 55 feet (16 764 mm) or more above the lowest level of fire department vehicle access.~~ Any building which is of three stories or more in height shall be equipped with an approved automatic sprinkler system installed in accordance with Section 903.1.

**Exceptions:**

1. ~~Airport control towers.~~ Single- and two-family dwellings.

2. ~~Open parking structures.~~ A stand-alone parking garage constructed with noncombustible materials, the design of which is such that all levels of the garage are uniformly open to the atmosphere on all sides with the percentages of openings equal to or greater than those specified in Section 406.3. Such garages shall be separated from any other structure by not less than 20 feet (6096 mm). A stand-alone parking garage is one that is solely for the parking of vehicles and does not have any other occupancy group in the building.

3. ~~Occupancies in Group F-2.~~ Telecommunication spaces located within telecommunication buildings, if the spaces are equipped to meet an equivalent fire prevention standard approved by both the Florida Building Commission and the State Fire Marshal.

4. Telecommunications spaces within telecommunication buildings, if the telecommunications space is equipped with:

4**.**1. Air sampling smoke detection.

4.2. Remote, proprietary or central station fire alarm monitoring.

4.3. Automatic smoke exhaust system.

4.4. One-hour fire-resistance wall separating the telecommunications space from the adjacent areas on the same floor.

4.5. Two-hour floor/ceiling assembly separating the telecommunications space from adjacent floors.

4.6. All other portions ancillary to the telecommunications equipment area shall be provided with fire sprinkler protection.

5. Sprinkler systems installed solely as a requirement of Section 903.**~~6~~2.11.3** may be a NFPA 13R or NFPA 13D system in accordance with their scopes.

**903.2.11.3.1** NFPA 101 as adopted by Florida Fire Prevention Code, as regarding the requirements for fire protection sprinklers, is applicable to all multiple-family residential buildings, whether designated as townhouses, condominiums, apartment houses, tenements, garden apartments or by any other name. The attorney general has determined that for the purpose of the fire protection sprinkler requirements in Section 553.895(2), Florida Statutes, townhouses that are three or more stories tall and consist of three or more units together are multiple-family dwellings. Therefore, these types of townhouses are not exempt from being considered for the requirements to provide fire protection sprinklers (even if there are any other definitions that define a townhouse as a single-family residence). When determining whether townhouses require fire protection sprinkler systems, the building official must consider in parallel: (a) the attorney general’s opinion defining the statutory language for townhouses; (b) the building code requirements, including all life-safety chapters, that provide additional determining criteria, such as construction types, fire-resistance, fire protection systems and egress; and (c) the NFPA 101 as adopted by Florida Fire Prevention Code, egress and protection determining criteria. The more restrictive criteria are then applied.

***Section 907 – Fire Alarm and Detection Systems. Add Sections 907.1.4 and 907.9 to read as follows:***

**907.1.4 Accessibility.**Every required fire alarm system shall include a visible alarm indicating appliances in public and common areas. For more specific accessibility requirements related to alarm indicating appliances, refer to ~~Section 11-4.28.~~ applicable sections of the *Florida Building Code, Accessibility*

***Section 907 – Fire Alarm and Detection Systems. Change Section 907.5.2.2.4 to read as follows:***

**907.5.2.2.4 Emergency voice/alarm communication captions.**Where stadiums, arenas and grandstands are required to caption audible public announcements in accordance with the *Florida Building Code, Accessibility* ~~Section 1108.2.7.2~~, the emergency/voice alarm communication system shall also be captioned. Prerecorded or live emergency captions shall be from an *approved* location constantly attended by personnel trained to respond to an emergency.

***Section 907 – Fire Alarm and Detection Systems. Add Section 907.9 to read as follows:***

**907.9 Accessibility.** Alarm systems required to be accessible shall comply with the applicable sections of the *Florida Building Code, Accessibility*

***Section 908 – Carbon Monoxide Protection. Change Section 908.7 to read as follows:***

**908.7 ~~Carbon monoxide alarms.~~** ~~Group I or R occupancies located in a building containing a fuel-burning appliance or in a building which has an attached garage shall be equipped with single-station carbon monoxide alarms. The carbon monoxide alarms shall be listed as complying with UL 2034 and be installed and maintained in accordance with NFPA 720 and the manufacturer’s instructions. An open parking garage, as defined in~~ [~~Chapter 2~~](javascript:Next('./icod_ibc_2012_2_par001.htm');)~~, or an enclosed parking garage ventilated in accordance with Section 404 of the~~ *~~International Mechanical Code~~* ~~shall not be considered an attached garage.~~ **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 a byproduct of combustion shall have an operational carbon monoxide alarm installed within 10 feet of each room used for sleeping purposes in the new building or addition, or at such other locations as required by this Code.

**~~Exception:~~***~~Sleeping units~~* ~~or~~ *~~dwelling units~~* ~~which do not themselves contain a fuel-burning appliance or have an attached garage, but which are located in a building with a fuel-burning appliance or an attached garage, need not be equipped with single-station carbon monoxide alarms provided that:~~

~~1. The~~ *~~sleeping unit~~* ~~or~~ *~~dwelling unit~~* ~~is located more than one story above or below any story which contains a fuel-burning appliance or an attached garage;~~

~~2. The~~ *~~sleeping unit~~* ~~or~~ *~~dwelling unit~~* ~~is not connected by duct work or ventilation shafts to any room containing a fuel-burning appliance or to an attached garage; and~~

~~3. The building is equipped with a common area carbon monoxide alarm system.~~

**908.7.1 ~~Carbon monoxide detection systems.~~** ~~Carbon monoxide detection systems, which include carbon monoxide detectors and audible notification appliances, installed and maintained in accordance with this section for carbon monoxide alarms and NFPA 720 shall be permitted. The carbon monoxide detectors shall be~~ *~~listed~~* ~~as complying with UL 2075.~~ **~~916.1.1~~ Carbon monoxide alarm.** The requirements of Section 908.7 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.

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

**Exceptions:**

1. An approved operational carbon monoxide detector shall be installed inside or directly outside of each room or area within a hospital, inpatient hospice facility or nursing home facility licensed by the Agency for Health Care Administration, or a new state correctional institution where a fossil-fuel burning heater, engine, or appliance is located. The carbon monoxide detector shall be connected to the fire-alarm system of the hospital, inpatient hospice facility, or nursing home facility as a supervisory signal.

2. This section shall not apply to existing buildings that are undergoing alterations or repair unless the alteration is an addition as defined in Section 908.7.3 ~~916.1.3~~.

**908.7.3** Addition shall mean an extension or increase in floor area, number of stories or height of a building or structure.

***Section 909 – Smoke Control Systems. Change Section 909.3 to read as follows:***

**909.3 Special inspection and test requirements.** In addition to the ordinary inspection and test requirements which buildings, structures and parts thereof are required to undergo, smoke control systems subject to the provisions of Section 909 shall undergo *special inspections* and tests sufficient to verify the proper commissioning of the smoke control design in its final installed condition. The design submission accompanying the *construction documents* shall clearly detail procedures and methods to be used and the items subject to such inspections and tests. Such commissioning shall be in accordance with generally accepted engineering practice and, where possible, based on published standards for the particular testing involved. ~~The special inspections and tests required by this section shall be conducted under the same terms in Section 1704.~~

**Chapter 10 – Means of Egress**

***Section 1002 – Definitions. Change Section 1002.1 to add definition as follows:***

**1002.1 Definitions.** The following terms are defined in Chapter 2:

Means of Escape

***Section 1003 – General Means of Egress. Add Section 1003.5.1 to read as follows:***

**1003.5.1 Accessibility**. For accessibility provisions related to changes in levels, see the *Florida Building Code, Accessibility.*

***Section 1003 – General Means of Egress. Change Section 1003.7 to read as follows:***

**1003.7 Elevators, escalators and moving walks.** Elevators, escalators and moving walks shall not be used as a component of a required *means of egress* from any other part of the building.

**Exception:** Elevators used as an *accessible means of egress* in accordance with Section1007 ~~1007.4~~.

***Section 1004 – Occupant Load. Change Section 1004.4 to read as follows:***

**1004.4 Fixed seating.** For areas having fixed seats and *aisles*, the *occupant load* shall be determined by the number of *fixed seats* installed therein. The *occupant load* for areas in which *fixed seating* is not installed, such as waiting spaces, shall be determined in accordance with Section 1004.1.2 and added to the number of *fixed seats*.

The *occupant load* of *wheelchair spaces* and the associated companion seat shall be based on one occupant for each *wheelchair space* and one occupant for the associated companion seat provided in accordance with the *Florida Building Code, Accessibiltiy* ~~Section 1108.2.3~~.

For areas having *fixed seating* without dividing arms, the occupant load shall not be less than the number of seats based on one person for each 18 inches (457 mm) of seating length.

The occupant load of seating booths shall be based on one person for each 24 inches (610 mm) of booth seat length measured at the backrest of the seating both.

***Section 1007 – Accessible Means of Egress****.* ***Change Section 1007 to read as shown:***

**1007.1 Accessible means of egress required.** *Accessible* *means of egress* shall be provided in accordance with the applicable sections of the *Florida Building Code, Accessibility***.** ~~comply with this section.~~ *~~Accessible~~* ~~spaces shall be provided with not less than one~~ *~~accessible means of egress~~*~~. Where more than one~~ *~~means of egress~~* ~~are required by~~ [~~Section 1015.1~~](javascript:Next('./icod_ibc_2012_10_par208.htm');) ~~or~~ [~~1021.1~~](javascript:Next('./icod_ibc_2012_10_par242.htm');) ~~from any~~ *~~accessible~~* ~~space, each~~ *~~accessible~~* ~~portion of the space shall be served by not less than two~~ *~~accessible means of egress~~*~~.~~

**~~Exceptions:~~**

~~1.~~ *~~Accessible~~**~~means of egress~~* ~~are not required in alterations to existing buildings.~~

~~2. One~~ *~~accessible means of egress~~* ~~is required from an~~ *~~accessible~~**~~mezzanine~~* ~~level in accordance with~~ [~~Section 1007.3~~](javascript:Next('./icod_ibc_2012_10_par046.htm');)~~,~~ [~~1007.4~~](javascript:Next('./icod_ibc_2012_10_par047.htm');) ~~or [1007.5.](javascript:Next('./icod_ibc_2012_10_par048.htm');)~~

~~3. In assembly areas with sloped or stepped~~ *~~aisles~~*~~, one~~ *~~accessible means of egress~~* ~~is permitted where the common path of travel is~~ *~~accessible~~* ~~and meets the requirements in~~ [~~Section 1028.8.~~](javascript:Next('./icod_ibc_2012_10_par321.htm');)

**1007.2 Continuity and components.**Reserved.

**1007.3 Stairways.**Reserved.

**1007.4 Elevators**.  Reserved.

**1007.5 Platform lifts.**Reserved.

**1007.6 Areas of refuge.**Reserved.

**1007.7 Exterior area for assisted rescue.**Reserved.

**1007.8 Two-way communication.** Reserved.

**1007.9 Signage.**Reserved.

**1007.10 Directional signage.** Reserved.

**1007.11 Instructions.**Reserved.

***Section 1008 – Doors, Gates and Turnstiles. Change Section 1008.1 to read as shown:***

**1008.1 Doors**. Means of egress doors shall meet the requirements of this section. Doors serving a means of egress system shall meet the requirements of this section and Section 1020.2. Doors provided for egress purposes in numbers greater than required by this code shall meet the requirements of this section. For accessibility provisions related to doors, refer to the *Florida Building Code, Accessibility.*

*Means of egress* doors shall be readily distinguishable from the adjacent construction and finishes such that the doors are easily recognizable as doors. Mirrors or similar reflecting materials shall not be used on *means of egress* doors. *Means of egress* doors shall not be concealed by curtains, drapes, decorations or similar materials.

***Section 1008 – Doors, Gates and Turnstiles. Change Section 1008.1.1 to read as shown:***

**1008.1.1 Size of doors.**(No change to main body of text)

**Exceptions:**

1. – 6. (No change)

7.  In other than Group R-1 occupancies, the minimum widths shall not apply to interior egress doors within a dwelling unit or sleeping unit that is not required to be an Accessible unit~~, Type A unit or Type B unit~~.

8. ~~Door openings required to be~~ *~~accessible~~* ~~within~~ *~~Type B units~~* ~~shall have a minimum clear width of 31.75 inches (806 mm).~~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 1008 – Doors, Gates and Turnstiles. Add Section 1008.1.4.5 to read as shown:***

**1008.1.4.5 Protection devices for emergency escape and rescue openings.** The temporary installation or closure of storm shutters, panels and other approved hurricane protection devices shall be permitted on emergency escape and rescue openings in Group R occupancies during the threat of a storm. Such devices shall not be required to comply with the operational constraints of Section 1029.4. While such protection is provided, at least one means of escape from the dwelling or dwelling unit shall be provided. The means of escape shall be within the first floor of the dwelling or dwelling unit and shall not be located within a garage without a side hinged door leading directly to the exterior. Occupants in any part of the dwelling or dwelling unit shall be able to access the means of escape without passing through a lockable door not under their control.

***Section 1008 – Doors, Gates and Turnstiles. Change Section 1008.1.5 to read as shown:***

**1008.1.5 Floor elevation.** There shall be a floor or landing on each side of a door. Such floor or landing shall be at the same elevation on each side of the door. Landings shall be level except for exterior landings, which are permitted to have a slope not to exceed 0.25 unit vertical in 12 units horizontal (2-percent slope).

**Exceptions:**

1. -2. (No Change)

3.In Group R-3 occupancies not required to be *Accessible units*, *~~Type A units~~* ~~or~~ *~~Type B units~~*~~,~~ the landing at an exterior doorway shall not be more than 7 ¾ inches (197 mm) below the top of the threshold, provided the door, other than an exterior storm or screen door, does not swing over the landing.

4. – 5. (No Change)

***Section 1008 – Doors, Gates and Turnstiles. Change Section 1008.1.7 to read as shown:***

**1008.1.7 Thresholds.** Thresholds at doorways shall not exceed 3/4 inch (19.1 mm) in height ~~above the finished floor or landing~~ for sliding doors serving dwelling units or 1/2 inch (12.7 mm) ~~above the finished floor or landing~~ for other doors. Raised thresholds and floor level changes greater than 1/4 inch (6.4 mm) at doorways shall be beveled with a slope not greater than one unit vertical in two units horizontal (50-percent slope).   
  
 **Exceptions:** ~~In occupancy Group R-2 or R-3, threshold heights for sliding and side-~~ ~~hinged exterior doors shall be permitted to be up to 7~~~~3~~~~/~~~~4~~ ~~inches (197 mm) in height if all~~  ~~of the following apply:~~

1. ~~The door is not part of the required~~ *~~means of egress~~*~~.~~ The threshold height shall be limited to 73/4 inches (197 mm) where the occupancy is Group R-2; the door is an exterior door that is not a component of the required *means of egress* and the doorway is not on an accessible route. In one- and two-family dwellings where the door discharges to the outside or to an exterior balcony or exterior exit access, the floor level outside the door shall be permitted to be one step lower than the inside, but not more than 8 inches (203 mm) lower.

2. ~~The door is not part of an~~ *~~accessible route~~* ~~as required by~~ [~~Chapter 11~~](javascript:Next('./icod_ibc_2012_11_par001.htm');)~~.~~ For exterior doors serving dwelling units, thresholds at doorways shall not exceed the height required to pass the water resistance test of ANSI/AAMA/WDMA 101/I.S.2, or TAS 202 for high- velocity hurricane zones, or the maximum allowable height difference between interior floor levels. Exterior floor level shall comply with the following:

|  |  |
| --- | --- |
| **LEVEL DIFFERENCE (inches)** | **AT PRIMARY DOOR** |
| 0 | Pervious construction (e.g., wood decking with spaces) |
| 1/2 | Impervious construction (e.g., concrete, brick or flag stone) |
| **LEVEL DIFFERENCE (inches)** | **AT SECONDARY DOOR** |
| 1/2 | Pervious construction |
| 4 | Impervious construction |

~~3. The door is not part of an~~ *~~Accessible unit~~*~~,~~ *~~Type A unit~~* ~~or~~ *~~Type B unit~~*~~.~~

***Section 1009 – Stairways. Change Section 1009.4 to read as follows:***

**1009.4 Width.** The width of *stairways* shall be determined as specified in Section 1005.1, but such width shall not be less than 44 inches (1118 mm). See Section1007 ~~1007.3~~ for *accessible means of egress stairways*.

**Exceptions:** (No Change)

***Section 1009 – Stairways. Change Section 1009.7.5.3 to read as follows:***

**1009.7.5.3 Solid risers.** Risers shall be solid.

**Exceptions:**

1. Solid risers are not required for *stairways* that are not required to comply with Section1007 ~~1007.3~~, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm).

2-4. (No Change)

***Section 1009 – Stairways. Change Section 1009.1 to read as follows:***

**1009.9.1 Stairway walking surface.** The walking surface of treads and landings of a stairway shall not be sloped steeper than one unit vertical in 48 units horizontal (2-percent slope) in any direction. Stairway treads and landings shall have a solid surface. Finish floor surfaces shall be securely attached.

**Exceptions:**

(1-2 No change)

3. See also the *Florida Building Code, Accessibility*.

***Section 1009 – Stairways. Add Section 1009.18 to read as shown:***

**1009.18 Accessible stairs.** Stairs required to be accessible shall comply with the *Florida Building Code, Accessibility.*

***Section 1010 – Ramps. Change Section 1010.1 to read as shown:***

**1010.1 Scope.** The provisions of this section shall apply to ramps used as a component of a means of egress.

**Exceptions:**

1. Other than ramps that are parts of accessible routes providing access in accordance with ~~Sections 1108.2 through 1108.2.4 and 1108.2.~~6 the provisions of the Florida Building Code, Accessibility, ramped aisles within assembly rooms or spaces shall conform to the provisions in 1028.11

2. Curb ramps not subject to *Florida Building Code, Accessibility*, shall comply with ICC ANSI A117.1.

3. Vehicle ramps in parking garages for pedestrian *exit access* shall not be required to comply with ~~Sections 1010.4 through 1010.10~~ the provisions of the *Florida Building Code, Accessibility* when they are not an accessible route serving accessible parking spaces, other required *accessible* elements, or part of an *accessible means of egress*.

***Section 1010 – Ramps. Change Section 1010.4 to read as shown:***

**1010.~~3~~ 4 Cross slope.** The slope measured perpendicular to the direction of travel of a ramp shall not be steeper than one unit vertical in 48 units horizontal (2-percent slope).

**Exception:** See also the *Florida Building Code, Accessibility.*

***Section 1010 – Ramps. Change Section 1010.7 to read as shown:***

**1010.7 Landings.** *Ramps* shall have landings at the bottom and top of each *ramp*, points of turning, entrance, *exits,* ~~and~~ at doors and in accordance with the *Florida Building Code, Accessibility*. Landings shall comply with Sections 1010.~~6~~7.1 through 1010.7.5.

***Change Section 1010.7.1 to read as shown:***

**1010.7.1 Slope**. Landings shall have a slope not steeper than one unit vertical in 48 units horizontal (2-percent slope) in any direction. Changes in level are not permitted.

**Exception:** see also the *Florida Building Code, Accessibility*.

***Change Section 1010.7.3 to read as shown:***

**1010.7.3 Length**. The landing length shall be 60 inches (1525 mm) minimum.

**Exceptions:**

1. In Group R-2 and R-3 individual dwelling and sleeping units that are not required to be *Accessible units*, ~~Type A units or Type B units in accordance with Section 1107~~ landings are permitted to be 36 inches (914 mm) minimum.

 2.  (No change)

3. Accessible landings shall comply with the *Florida Building Code, Accessibility.*

***Section 1010 – Ramps. Change Section 1010.7.4 to read as shown:***

**1010.7.4 Change in direction.** Where changes in direction of travel occur at landings provided between *ramp* runs, the landing shall be 60 inches by 60 inches (1524 mm by 1524 mm) minimum.

**Exception:** In Group R-2 and R-3 individual dwelling or sleeping units that are not required to be *Accessible units*~~,~~ *~~Type A units~~* ~~or~~ *~~Type B units~~* in accordance with the *Florida Building Code, Accessibility* ~~Section 1107~~, landings are permitted to be 36 inches by 36 inches (914 mm by 914 mm) minimum.

***Section 1010 – Ramps. Change Section 1010.10 to read as shown:***

**1010.10 Edge protection.** Edge protection complying with Sections 1010.10.1 or 1010.109.2 shall be provided on each side of ramp runs and at each side of ramp landings.

**Exceptions:**

1.      Edge protection is not required on ramps not required to have handrails, provided they have flared sides that comply with ~~the ICC A117.1 curb ramp~~ provisions of the *Florida Building Code, Accessibility.*

2 – 4 No change.

***Section 1012 – Handrails. Change Section 1012.3 to read as shown:***

**1012.3 Handrail graspability.** All required *handrails* shall comply with Section 1012.3.1 or shall provide equivalent graspability.

**Exceptions:**

**1.**In Group R-3 occupancies; within *dwelling units* in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual *dwelling units* in Group R-2 occupancies; *handrails* shall be Type I in accordance with Section 1012.3.1, Type II in accordance with Section 1012.3.2 or shall provide equivalent graspability.

**2.**Accessible *handrails* shall meet the requirements of the *Florida Building Code, Accessibility.*

***Section 1012 – Handrails. Change Section 1012.6 to read as shown:***

**1012.6 Handrail extensions.** *Handrails* shall return to a wall, *guard* or the walking surface or shall be continuous to the handrail of an adjacent *stair flight* or ramp run. Where *handrails* are not continuous between *flights,* the *handrails* shall extend horizontally at least 12 inches (305 mm) beyond the top riser and continue to slope for the depth of one tread beyond the bottom riser. At *ramps* where *handrails* are not continuous between runs, the *handrails* shall extend horizontally above the landing 12 inches (305 mm) minimum beyond the top and bottom of *ramp* runs. The extensions of *handrails* shall be in the same direction of the *stair flights* at *stairways* and the *ramp* runs at *ramps*.

**Exceptions:**

1. – 3.(No change)

4.Accessible handrail extensions shall be as per the *Florida Building Code, Accessibility***.**

***Section 1015 - Exit and Exit Access Doorways****.* ***Change Section 1015.1 to read as shown:***

**1015.1 Exits or exit access doorways from spaces.** Two *exits* or *exit access* doorways from any space shall be provided where one of the following conditions exists:

1. The *occupant load* of the space exceeds one of the values in Table 1015.1.

**Exceptions:**

1. ~~In Group R-2 and R-3 occupancies, one~~ *~~means of egress~~* ~~is permitted within and from individual dwelling units with a maximum~~ *~~occupant load~~* ~~of 20 where the dwelling unit is equipped throughout with an~~ *~~automatic sprinkler system~~* ~~in accordance with~~ [~~Section 903.3.1.1~~](javascript:Next('./icod_ibc_2012_9_par054.htm');) ~~or [903.3.1.2.](javascript:Next('./icod_ibc_2012_9_par056.htm');)~~ [Reserved](javascript:Next('./icod_ibc_2012_9_par056.htm');)

2. Care suites in Group I-2 occupancies complying with [Section 407.4.3.](javascript:Next('./icod_ibc_2012_4_par184.htm');)

2. The *common path of egress travel* exceeds one of the limitations of [Section 1014.3.](javascript:Next('./icod_ibc_2012_10_par207.htm');)

3. Where required by [Section 1015.3](javascript:Next('./icod_ibc_2012_10_par213.htm');), [1015.4](javascript:Next('./icod_ibc_2012_10_par214.htm');), [1015.5](javascript:Next('./icod_ibc_2012_10_par215.htm');), or [1015.6.](javascript:Next('./icod_ibc_2012_10_par216.htm');)   
Where a building contains mixed occupancies, each individual occupancy shall comply with the applicable requirements for that occupancy. Where applicable, cumulative *occupant loads* from adjacent occupancies shall be considered in accordance with the provisions of [Section 1004.1.](javascript:Next('./icod_ibc_2012_10_par017.htm');)

**TABLE 1015.1**

**SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY**

|  |  |
| --- | --- |
| **OCCUPANCY** | **MAXIMUM OCCUPANT LOAD** |
| A,B, E,F,M,U, R2, R3 | 49 |
| H-1,H-2,H-3 | 3 |
| H-4, H-5, I-1, I-3, I-4, ~~R~~ R-1, R-4 | 10 |
| S | 29 |

***Change Section 1015.2.1 to read as shown:***

**1015.2.1 Two exits or exit access doorways.** (No Change)

**Exceptions:**

1. – 2. ( No change.)

3.  In Group R1 and R2 occupancies, the distance between exits is not applicable to common nonlooped exit access corridors in a building that has corridor doors from the guestroom or guest suite or dwelling unit, which are arranged so that the exits are located in opposite directions from such doors.

***Section 1029 – Emergency Escape and Rescue. Change Section 1029.1 to read as shown:***

**1029.1 General.** In addition to the *means of egress* required by this chapter, provisions shall be made for *emergency escape and rescue openings* in Group R-2 occupancies in accordance with Tables 1021.2(1) and 1021.2(2) and Group R-3 occupancies. Basements and sleeping rooms below the fourth story above *grade plane* shall have at least one exterior *emergency escape and rescue opening* in accordance with this section. Where basements contain one or more sleeping rooms, *emergency escape and rescue openings* shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Such openings shall open directly into a *public way* or to a *yard or court* that opens to a *public way*.

**Exceptions:**

1. Basements with a ceiling height of less than 80 inches (2032 mm) shall not be required to have *emergency escape and rescue openings*.
2. *Emergency escape and rescue openings* are not required from basements or sleeping rooms that have an *exit* door or *exit access* door that opens directly into a *public way* or to a *yard*, *court* or exterior exit balcony that opens to a *public way*.
3. Basements without *habitable spaces* and having no more than 200 square feet (18.6 m2) in floor area shall not be required to have *emergency escape and rescue openings*.

4. Security and hurricane devices installed in accordance with Section 1008.1.4.5.

**Chapter 11 – Accessibility**

***Section 1101 – General. Change Section 1101.1 to read as shown:***

**1101.1 Scope.** ~~The provisions of this chapter shall control the design and construction of facilities for accessibility to physically disabled persons.~~ This chapter governs the design and construction of buildings for accessibility.

**1101.1.1 Criteria.** Buildings shall be designed and constructed in accordance with the *Florida Building Code, Accessibility*.

**Chapter 12 – Interior Environment**

(No change)

**Chapter 13 – Energy Efficiency**

***Section 1301 – Energy Efficiency. Change Section 1301.1 to read as shown:***

**1301.1.1 Criteria.** Buildings shall be designed and constructed in accordance with the *~~International Energy Conservation Code~~*~~.~~ *Florida Building Code, Energy Conservation.*

**Chapter 14 – Exterior Walls**

***Section 1401 – General. Change Section 1401.1 to read as shown:***

**1401.1 Scope.** The provisions of this chapter shall establish the minimum requirements for exterior walls, *exterior wall* coverings, *exterior wall* openings, exterior windows and doors, architectural *trim*, balconies and similar projections; and bay and oriel windows.

**~~Exception:~~** ~~Buildings and structures located within the high-velocity hurricane zone shall comply with the provisions of Sections 1403.8 and 1410.~~

***Section 1403 – Performance Requirements. Change Section 1403.7 to read as shown:***

**1403.7 Flood resistance for ~~velocity wave action areas~~  coastal high hazard areas.** For buildings in ~~flood hazard areas subject to high-velocity wave action~~ coastal high hazard areas as established in Section 1612.3, electrical, mechanical and plumbing system components shall not be mounted on or penetrate through exterior walls that are designed to break away under flood loads.

***Section 1403 – Performance Requirements. Add Section 1403.8 to read as shown:***

**1403.8**  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:**

1. 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 2114.2.

***Section 1404 – Materials. Change Section 1404.5 to read as shown:***

**1404.5 Metal.** Exterior walls of formed steel construction, structural steel or lightweight metal alloys shall be designed in accordance with Chapters 22 and 20, respectively.

**1404.5.1 Aluminum siding.** Aluminum siding shall conform to the requirements of AAMA 1402 and TAS 202 and 203 in the HVHZ.

AAMA 1402, shall be modified to read as follows:

Section 1 Standard Specifications for Aluminum Siding, Soffit, and Fascia, 2.0 Siding Specifications, 2.2 Performance Criteria, 2.2.1 Windload Resistance

**2.2.1.1 Static Pressure Test**

2.2.1.1.1All siding products shall be capable of resisting the design pressures specified for walls for components and cladding loads in accordance with Section 1609.1.1. To verify that the siding will perform under these conditions, it shall be tested in accordance with Test Method #1, “Standard for Testing of Aluminum Siding/Fastener for Windload Resistance” or in an approved manner. The static test pressure shall be as required to demonstrate compliance with the provisions of Section 1609.1.

2.2.1.1.2 For applications where the effective design pressure as specified in Section 1609.1.1 is greater than 1040 Pa(21.7 psf) [e.g. wind zone areas greater than 36 m/s (80 mph) or elevations above 33 feet (10 m)] the product shall b tested in accordance with Test Method #1 under a static test pressure determined by the formula:

PT = 1.5 × DP

Where:  
PT = Static Test Pressure [Pa (psf)]   
DP = Design Pressure [Pa (psf)]   
1.5 = Safety Factor

\* Delete Section 2.2.1.2 and corresponding table.

**Strike Table:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **MINIMUM THICKNESS**  **± 0.05 MM (± .002 IN)** | **MAXIMUM PANEL WIDTH** | **MAXIMUM FLAT AREA** |
| Unbacked Siding | 0.5 mm (0.019 in) | 260 mm (10 in) | 210 mm (8 in) |
| Backed Siding | 0.5 mm (0.019 in) | 460 mm (10 in) | 260 mm (10 in) |

**3.0** Soffit and Fascia Specifications, 3.2 Performance Criteria, 3.2.1 Windload Resistance

3.2.1.1 Static Pressure Test

3.2.1.1.1 All soffit products shall be capable of resisting the design pressures specified for walls for components and cladding loads in accordance with Section 1609.1.1. To verify that the soffit will perform under these conditions, it shall be tested in the maximum unsupported length for which the manufacturer seeks conformance when tested in accordance with Test Method #4, “Standard for Testing of Soffits and Windload Resistance.”

The static test pressure shall be as required to demonstrate compliance with the provisions of Section 1609.1.

3.2.1.1.2 For applications where the effective design pressure as specified in Section 1609.1.1 is greater than 1040 Pa (21.7 psf) [e.g. wind zone areas greater than (80 mph) 36 m/s or elevations above (33 ft.) 10 m] the product shall be tested in accordance with Test Method #4 under a static test pressure determined by the formula:

PT = × 1.5 × DPp

Where:

PT = Static Test Pressure [Pa (psf)]   
DPp = Design Pressure [Pa (psf)]   
1.5 = Safety Factor

Section 3, Appendix, Windload Criteria is deleted in its entirety.

***Section 1404 – Materials. Add Section 1404.13 to read as shown:***

**1404.13** Manufactured soffit materials and systems shall be labeled in accordance with the provisions of Section 1710.9 of this code.

***Section 1405 – Installation of Wall Coverings. Change Section 1405.1 to read as shown:***

**1405.1 General.** *Exterior wall coverings* shall be designed and constructed in accordance with the applicable provisions of this section and TAS 202 and 203 in the HVHZ.

***Section 1405 – Installation of Wall Coverings. Change Table 1405.2 to read as shown:***

**TABLE 1405.2**

**MINIMUM THICKNESS OF WEATHER COVERINGS**

|  |  |  |
| --- | --- | --- |
| **COVERING TYPE** | **MINIMUM THICKNESS**  **(inches)** | |
| Adhered masonry veneer | 0.25 | |
| Aluminum siding | 0.019 | |
| Anchored masonry veneer | 2.625 | |
| Asbestos-cement boards | 0.125 | |
| Asbestos shingles | 0.156 | |
| Cold-rolled copperd | 0.0216 nominal | |
| Copper shinglesd | 0.0162 nominal | |
| Exterior plywood (with sheathing) | 0.313 | |
| Exterior plywood (without sheathing) | See [Section 2304.6](javascript:Next('./st_fl_st_b200v10_23_sec004_par011.htm');) (HVHZ see Section 2322) | |
| Fiber-cement lap siding | 0.25c | |
| Fiber-cement panel siding | 0.25c | |
| Fiberboard siding | 0.5 | |
| Glass-fiber reinforced concrete panels | 0.375 | |
| Hardboard sidingc | 0.25 | |
| High-yield copperd | 0.0162 nominal | |
| Lead-coated high-yield copper | 0.0162 nominal | |
| Marble slabs | 1 | |
| Particleboard (with sheathing) | See [Section 2304.6](javascript:Next('./st_fl_st_b200v10_23_sec004_par011.htm');) (HVHZ see Section 2315.1.11) | |
| Particleboard (without sheathing) | See [Section 2304.6](javascript:Next('./st_fl_st_b200v10_23_sec004_par011.htm');) (HVHZ see Section 2315.1.11) | |
| Precast stone facing | 0.625 | |
| Steel (approved corrosion resistant) | 0.0149 | |
| Stone (cast artificial) | 1.5 | |
| Stone (natural) | 2 | |
| Structural glass | 0.344 | |
| Stucco or exterior cement plaster |  | |
| Three-coat work over: |  | |
| Metal plaster base | 0.875b | |
| Unit masonry | 0.625b | |
| Cast-in-place or precast concrete | 0.625b | |
| Two-coat work over: |  | |
| Unit masonry | 0.5b | |
| Cast-in-place or precast concrete | 0.375b | |
| Terra cotta (anchored) | 1 | |
| Terra cotta (adhered) | 0.25 | |
| Vinyl siding | 0.035 | |
| Wood shingles | 0.375 | |
| Wood siding (without sheathing)a | 0.5 | |
| Lead-coated copperd | 0.0216 nominal | |
| For SI: 1 inch = 25.4 mm, 1 ounce per square foot = 0.305 kg/m2. | |
| a. Wood siding of thicknesses less than 0.5 inch shall be placed over sheathing that conforms to [Section 2304.6.](javascript:Next('./st_fl_st_b200v10_23_sec004_par011.htm');) (HVHZ see Section 2322) | |
| b. Exclusive of texture. | |
| c. As measured at the bottom of decorative grooves. | |
| d. 16 ounces per square foot for cold-rolled copper and lead-coated copper, 12 ounces per square foot for copper shingles, high-yield copper and lead-coated high-yield copper. | |
| e. Includes scratch coat, setting bed, and precast stone. | |

***Section 1405 – Installation of Wall Coverings. Change Section 1405.17 to read as shown:***

**1405.17 Fastening.**  Weather boarding and wall coverings shall be securely fastened with aluminum, copper, zinc, zinc-coated or other *approved* corrosion-resistant fasteners in accordance with the nailing schedule in Table 2304.9.1, the HVHZ shall comply with Table 2324.1 or the *approved* manufacturer's installation instructions. Shingles and other weather coverings shall be attached with appropriate standard-shingle nails to furring strips securely nailed to studs, or with *approved* mechanically bonding nails, except where sheathing is of wood not less than 1-inch (25 mm) nominal thickness or of wood structural panels as specified in Table 2308.9.3(3) (the HVHZ shall comply with Section 2322).

***Section 1408 – Exterior Insulation and Finish Systems (EIFS). Change Section 1408.6 to read as shown:***

**1408.6 Special inspections.** ~~EIFS installations shall comply with the provisions of Sections 1704.2 and 1705.15.~~ Reserved.

**Chapter 15 - Roof Assemblies and Rooftop Structures**

***Section 1501 – General. Change Section 1501.1 to read as shown:***

**1501.1 Scope**. The provisions of this chapter shall govern the design, materials, construction and quality of roof assemblies, and rooftop structures.

**Exception**: Buildings and structures located within the high-velocity hurricane zone shall comply with the provisions of Section 1503.7 and Sections 1512 through 1525.

***Section 1502 – Definitions. Change Section 1502.1 to read as shown:***

**1502.1 ~~Definitions~~ General.** The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein. ~~The following terms are defined in~~ [~~Chapter 2~~](javascript:Next('./icod_ibc_2012_2_sec001.htm');)~~:~~  
 **AGGREGATE.** In roofing, crushed stone, crushed slag or water-worn gravel used for surfacing for roof coverings.  **BALLAST.** In roofing, ballast comes in the form of large stones or paver systems or light-weight interlocking paver systems and is used to provide uplift resistance for roofing systems that are not adhered or mechanically attached to the roof deck.  **BUILDING INTEGRATED PHOTOVOLTAIC ROOFING.** A roofing product consisting of electricity generating photovoltaic component integrated into a roof covering.  **BUILT-UP ROOF COVERING.** Two or more layers of felt cemented together and surfaced with a cap sheet, mineral aggregate, smooth coating or similar surfacing material.  **INTERLAYMENT.** A layer of felt or nonbituminous saturated felt not less than 18 inches (457 mm) wide, shingled between each course of a wood-shake roof covering.  **MECHANICAL EQUIPMENT SCREEN.** A partially enclosed *rooftop structure* used to aesthetically conceal heating, ventilating and air conditioning (HVAC) electrical or mechanical equipment from view.  **METAL ROOF PANEL.** An interlocking metal sheet having a minimum installed weather exposure of 3 square feet (0.279 m2) per sheet.  **METAL ROOF SHINGLE.** An interlocking metal sheet having an installed weather exposure less than 3 square feet (0.279 m2) per sheet.  **MODIFIED BITUMEN ROOF COVERING.** One or more layers of polymer-modified asphalt sheets. The sheet materials shall be fully adhered or mechanically attached to the substrate or held in place with an *approved* ballast layer.  **PENTHOUSE.** An enclosed, unoccupied structure above the roof of a building, other than a tank, tower, spire, dome cupola or bulkhead.  **POSITIVE ROOF DRAINAGE.** The drainage condition in which consideration has been made for all loading deflections of the roof deck, and additional slope has been provided to ensure drainage of the roof within 48 hours of precipitation.  **REROOFING.** The process of recovering or replacing an existing roof covering. See "Roof recover" and "Roof replacement."  **ROOF ASSEMBLY.** A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly includes the roof deck, *vapor retarder*, substrate or thermal barrier, insulation, *vapor retarder* and roof covering.   
  
The definition of "Roof assembly" is limited in application to the provisions of Chapter 15.  **ROOF COVERING.** The covering applied to the roof deck for weather resistance, fire classification or appearance.  **ROOF COVERING SYSTEM.** See "Roof assembly."  **ROOF DECK.** The flat or sloped surface not including its supporting members or vertical supports.  **ROOF RECOVER.** The process of installing an additional roof covering over a prepared existing roof covering without removing the existing roof covering.  **ROOF REPAIR.** Reconstruction or renewal of any part of an existing roof for the purposes of its maintenance.  **ROOF REPLACEMENT.** The process of removing the existing roof covering, repairing any damaged substrate and installing a new roof covering.  **ROOF SECTION.** A separation or division of a roof area by existing joints, parapet walls, flashing (excluding valleys), 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.  **ROOF VENTILATION.** The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, attics, cathedral ceilings or other enclosed spaces over which a roof assembly is installed.  **ROOFTOP STRUCTURE.** An enclosed structure on or above the roof of any part of a building.  **SCUPPER.** An opening in a wall or parapet that allows water to drain from a roof.  **SINGLE-PLY MEMBRANE.** A roofing membrane that is field applied using one layer of membrane material (either homogeneous or composite) rather than multiple layers.  **UNDERLAYMENT.** One or more layers of felt, sheathing paper, nonbituminous saturated felt or other *approved* material over which a steep-slope roof covering is applied.

***Section 1503 – Weather Protection. Change Section 1503.2 to read as shown:***

**1503.2 Flashing.** Flashing shall be installed in such a manner so as to prevent moisture entering the wall and roof through joints in copings, through moisture-permeable materials and at intersections with parapet walls and other penetrations through the roof plane.

**1503.2.1 Locations.** Flashing shall be installed at wall and roof intersections, at gutters, wherever there is a change in roof slope or direction and around roof openings. Where flashing is of metal, the metal shall be corrosion resistant with a thickness not less than ~~0.019 inch (0.483 mm) (No. 26 galvanized sheet)~~ provided in Table 1503.2.

**Exception:** This requirement does not apply to hip and ridge junctions.

**TABLE 1503.2  
METAL FLASHING MATERIAL**

|  |  |  |  |
| --- | --- | --- | --- |
| **MATERIAL** | **MINIMUM**  **THICKNESS**  **(INCHES)** | **GAGE** | **WEIGHT (LBS**  **PER SQ FT)** |
| Copper |  |  | 1 (16 oz) | |
| Aluminum | 0.024 |  |  | |
| Stainless Steel |  | 28 |  | |
| Galvanized Steel | 0.0179 | 26 (zinc  coated G90) |  | |
| Aluminum Zinc  Coated Steel | 0.0179 | 26 (AZ50  Alum Zinc) |  | |
| Zinc Alloy | 0.027 |  |  | |
| Lead |  |  | 2.5 (40 oz) | |
| Painted Terne |  |  | 1.25 (20 oz) | |

***Section 1503 – Weather Protection. Change Section 1503.4 to read as shown:***

**1503.4 Roof drainage.** Unless roofs are sloped to drain over roof edges, ~~D~~ design and installation of roof drainage systems shall comply with Section 1503 ~~of this code and Sections 1106 and 1108, as applicable, of~~ and the *Florida Building Code, Plumbing,* Chapter 11 *~~International Plumbing Code~~*.

***Section 1503 – Weather Protection . Change Section 1503.4.1 to read as shown:***

**1503.4.1 Secondary (emergency overflow) drains or scuppers.** Where roof drains are required, secondary (emergency overflow) roof drains or scuppers shall be provided where the roof perimeter construction extends above the roof in such a manner that water will be entrapped if the primary drains allow buildup for any reason. The installation and sizing of secondary emergency overflow drains, leaders and conductors shall comply with Sections 1106 and ~~1108~~ 1107, as applicable, of the *~~International Plumbing Code~~ Florida Building Code, Plumbing,* Chapter 11 *.*

***Section 1503 – Weather Protection. Change Section 1503.4.2 to read as shown:***

**1503.4.2 Scuppers.** Where required for roof drainage, a scupper shall be placed level with the roof surface in a wall or parapet. The scupper shall be located as determined by the slope and the contributing area of the roof. The exterior facing or lining of a scupper, if metal, shall be the same as flashing material required by Sections 1503 through [1510](http://ecodes.citation.com/cgi-exe/cpage.dll?pg=x&rp=/indx/ST/fl/st/b200v10/st_fl_st_b200v10_15.htm&sid=2012051406022753592&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/nonindx/ST/fl/st/b200v10/index.htm#b=1510) for the particular type of covering specified for the building. For other type materials, follow manufacturer's specifications. ~~When scuppers are used for secondary (emergency overflow) roof drainage, the quantity, size, location and inlet elevation of the scuppers shall be sized to prevent the depth of ponding water from exceeding that for which the roof was designed as determined by Section 1611.1. Scuppers shall not have an opening dimension of less than 4 inches (102 mm). The flow through the primary system shall not be considered when locating and sizing scuppers.~~

**Section 1503 – Weather Protection. Add Section 1503.4.2.1 to read as shown:**

**1503.4.2.1 Overflow scuppers.** When other means of drainage of overflow water is not provided, overflow scuppers shall be placed in walls or parapets not less than 2 inches (51 mm) nor more than 4 inches (102 mm) above the finished roof covering and shall be located as close as practical to required vertical leaders or downspouts or wall and parapet scuppers. An overflow scupper shall be sized in accordance with the *Florida Building Code, Plumbing.*

***Section 1503 – Weather Protection. Change Section 1503.5 to read as shown:***

**1503.5 Roof ventilation.** Attic ventilation ~~Intake and exhaust vents~~ shall be provided in accordance with Section 1203.2 and the manufacturer's installation instructions.

***Section 1503 – Weather Protection. Change Section 1503.7 to read as shown:***

**1503.7 Protection against decay and termites.** Condensate lines 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.

***Section 1504 – Performance Requirements. Change Section 1504.1.1 to read as shown:***

**1504.1.1 Wind resistance of asphalt shingles.** Asphalt shingles shall ~~comply~~ be designed for wind speeds in accordance with Section 1507.2.7.

***Section 1504.3.2 Metal panel roof systems. Change to read as shown***

**1504.3.2 Metal*:* panel roof systems.** Metal panel roof systems through fastened or standing seam shall be tested in accordance with UL 580 or ASTM E 1592 or TAS 125.

(No change to remainder of text).

***Section 1504 – Performance Requirements. Change Section 1504.5 to read as shown:***

**1504.5 Edge securement for low-slope roofs.** Low-slope built-up, modified bitumen and single-ply roof system metal edge securement, except gutters, shall be designed and installed for wind loads in accordance with Chapter 16 and tested for resistance in accordance with Test Methods RE-1, RE-2 and RE-3 of ANSI/SPRI ES-1, or RAS 111 except *Vult* wind speed shall be determined from Figure 1609A, 1609B, or 1609C as applicable.

***Section 1504 – Performance Requirements. Change Section 1504.6 to read as shown:***

**1504.6 Physical properties.** Roof coverings installed on low-slope roofs (roof slope < 2:12) in accordance with Section 1507 shall demonstrate physical integrity over the working life of the roof based upon 2,000 hours of exposure to accelerated weathering tests conducted in accordance with ASTM G 152, ASTM G 153, ASTM G 155 or ASTM G 154. Those roof coverings that are subject to cyclical flexural response due to wind loads shall not demonstrate any significant loss of tensile strength for unreinforced membranes or breaking strength for reinforced membranes when tested as herein required.

***Section 1504 – Performance Requirements. Change Section 1504.7 to read as shown:***

**1504.7 Impact resistance.** Roof coverings installed on low-slope roofs (roof slope < 2:12) in accordance with Section 1507 shall resist impact damage based on the results of tests conducted in accordance with ASTM D 3746, ASTM D 4272, CGSB 37-GP-52M or the "Resistance to Foot Traffic Test" in Section 5.5 of FM 4470. All structural metal roofing systems having a thickness equal to or greater than 22 gage and all non-structural metal roof systems having a thickness equal to or greater than 26 gage shall be exempt from the tests listed above.

***Section 1504 – Performance Requirements. Change Section 1504.8 to read as shown:***

**1504.8 Aggregate.** Aggregate ~~used as surfacing for roof coverings and aggregate, gravel or stone used as ballast shall not be used on the roof of a building located in a hurricane-prone region as defined in Section 202, or on any other building with a mean roof height exceeding that permitted by Table 1504.8 based on the exposure category and basic wind speed at the site~~  shall be permitted as roof surfacing when installed on slopes of 3:12 or less, not less than 400 pound (182 kg) of roofing gravel or 300 pounds (145 kg) of slag per square shall be applied. A minimum of 50 percent of the total aggregate shall be embedded in the flood coat of bitumen or installed in accordance with its product approval. Aggregate shall be dry and free from dirt and shall be in compliance with the sizing requirements set forth in ASTM D 1863. A building official may request a test to confirm compliance with these requirements.

**TABLE 1504.8**

**MAXIMUM ALLOWABLE MEAN ROOF HEIGHT PERMITTED FOR BUILDINGS WITH AGGREGATE ON THE ROOF IN AREAS OUTSIDE A HURRICANE-PRONE REGION**

Reserved.

|  |  |  |  |
| --- | --- | --- | --- |
| **~~NOMINAL DESIGN WIND  SPEED,~~ *~~V~~~~asd~~*~~(mph)~~~~b, d~~** | **~~MAXIMUM MEAN ROOF HEIGHT (ft)~~~~a, c~~** | | |
| **~~Exposure category~~** | | |
| **~~B~~** | **~~C~~** | **~~D~~** |
| ~~85~~ | ~~170~~ | ~~60~~ | ~~30~~ |
| ~~90~~ | ~~110~~ | ~~35~~ | ~~15~~ |
| ~~95~~ | ~~75~~ | ~~20~~ | ~~NP~~ |
| ~~100~~ | ~~55~~ | ~~15~~ | ~~NP~~ |
| ~~105~~ | ~~40~~ | ~~NP~~ | ~~NP~~ |
| ~~110~~ | ~~30~~ | ~~NP~~ | ~~NP~~ |
| ~~115~~ | ~~20~~ | ~~NP~~ | ~~NP~~ |
| ~~120~~ | ~~15~~ | ~~NP~~ | ~~NP~~ |
| ~~Greater than 120~~ | ~~NP~~ | ~~NP~~ | ~~NP~~ |
| ~~For SI: 1 foot = 304.8 mm; 1 mile per hour = 0.447 m/s.~~ | | | |
| ~~a. Mean roof height as defined in ASCE 7.~~ | | | |
| ~~b. For intermediate values of~~ *~~V~~~~asd~~*~~, the height associated with the next higher value of~~ *~~V~~~~asd~~* ~~shall be used, or direct interpolation is permitted.~~ | | | |
| ~~c. NP = gravel and stone not permitted for any roof height.~~ | | | |

~~d.~~ *~~V~~~~asd~~* ~~shall be determined in accordance with Section 1609.3.1.~~

***Section 1504 – Performance Requirements. Add Section 1504.9 to read as shown:***

**1504.9 Margin of Safety.**  A margin of safety of 2:1 shall be applied to all wind uplift resistance test results except when a margin of safety is specified in the test standard.

**Exception:**  Asphalt shingles testing resulting in a miles per hour rating as required in section 1507.2.7.

***Section 1505.7 Special purpose roofs. Change to read as shown:***

**1505.7 Special purpose roofs.** Reserved. ~~Special purpose wood shingle or wood shake roofing shall conform with the grading and application requirements of Section 1507.8 or 1507.9. In addition, an underlayment of~~ ~~5~~~~/~~~~8~~~~-inch (15.9 mm) Type X water-resistant gypsum backing board or gypsum sheathing shall be placed under minimum nominal~~ ~~1~~~~/~~~~2~~~~-inch-thick (12.7 mm) wood structural panel solid sheathing or 1-inch (25 mm) nominal spaced sheathing.~~

***Section 1506 – Materials. Add Section 1506.5 to read as shown:***

**1506.5 Nails.** Nails shall be corrosion resistant nails conforming to ASTM F 1667. The corrosion resistance shall meet ASTM A 641, Class 1 or an equal corrosion resistance by coating, electro galvanization, mechanical galvanization, hot dipped galvanization, stainless steel, nonferrous metal and alloys or other suitable corrosion resistant material.

***Section 1506 – Materials. Add Section 1506.6 to read as shown:***

**1506.6 Screws.** Wood screws conform to ANSI/ASME B 18.6.1. Screws shall be corrosion resistant by coating, galvanization, stainless steel, nonferrous metal or other suitable corrosion resistant material. The corrosion resistance shall be demonstrated through one of the following methods:

1. Corrosion resistance equivalent to ASTM A 641, Class 1;

2. Corrosion resistance in accordance with TAS114, *Appendix E*; or

3. Corrosion resistant coating exhibiting not more than 5 percent red rust after 1000 hours exposure in accordance with ASTM B 117.

***Section 1506 – Materials. Add Section 1506.7 to read as shown:***

**1506.7 Clips.** Clips shall be corrosion resistant clips. The corrosion resistance shall meet 0.90 ounce per square foot (0.458 kg/m2) measured according to ASTM A 90/A 90M, TAS 114 *Appendix E* or an equal corrosion resistance coating, electro galvanization, mechanical galvanization, hot dipped galvanization, stainless steel, nonferrous metals and alloys or other suitable corrosion resistant material. Stainless steel clips shall conform to ASTM A167, Type 304.

***Section 1507.2.3 Underlayment. Change section to read as shown:***

**1507.2.3 Underlayment.** Unless otherwise noted, required underlayment shall conform to ASTM D 226, Type I or Type II, or ASTM D 4869 Type ~~I~~  II or Type IV or ASTM D 6757.

***Section 1507 – Requirements for Roof Coverings. Change Section 1507.2.5 to read as shown:***

**1507.2.5 Asphalt shingles.** Asphalt shingles shall have self-seal strips or be interlocking and comply with ASTM D 225 or ASTM D 3462. Shingles shall also comply with Table 1507.2.7.1. Asphalt shingle packaging shall bear labeling indicating compliance with one of the required classifications as shown in Table 1507.2.7.1.

***Section 1507 – Requirements for Roof Coverings. Add Section 1507.2.6.1 to read as shown:***

**1507.2.6.1** The nail component of plastic cap nails shall meet the corrosion resistance requirements of Section 1506.5.

***Section 1507 – Requirements for Roof Coverings. Change Section 1507.2.7 to read as shown:***

**1507.2.7 Attachment.** Asphalt shingles shall have the minimum number of fasteners required by the manufacturer~~, but~~  and Section 1504.1. Asphalt shingles shall be secured to the roof with not less than four fasteners per strip shingle or two fasteners per ~~individual~~ strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 21 units vertical in 12 units horizontal (21:12), asphalt shingles shall be installed ~~as required by~~ in accordance with the manufacturer's printed installation instructions for steep-slope roof applications.

***Section 1507 – Requirements for Roof Coverings. Change Section 1507.2.7.1 to read as shown:***

**1507.2.7.1 Wind Resistance of Asphalt Shingles.** Asphalt shingles shall be ~~tested~~ classified in accordance with ASTM D 3161, TAS 107 or ASTM D 7158. ~~Asphalt shingles shall meet the classification requirements of Table 1507.2.7.1(1) for the appropriate maximum basic wind speed.~~ Shingles classified as ASTM D 3161 Class D or ASTM D 7158 Class G are acceptable for use in the 100-mph wind zone. Shingles classified as ASTM D 3161 Class F, TAS107 or ASTM D 7158 Class H are acceptable for use in all wind zones. Asphalt shingle ~~packaging~~ wrappers shall ~~bear a label to~~ indicate compliance with ~~ASTM D 7158 and the~~ one of the required classifications as shown in Table 1507.2.7.1~~(1)~~.

~~Exception: Asphalt shingles not included in the scope of ASTM D 7158 shall be tested and labeled to indicate compliance with ASTM D 3161 and the required classification in Table 1507.2.7.1(2).~~

***Delete Tables1507.2.7.1(1) and 1507.2.7.1(2). Add table to read as shown:***

**TABLE 1507.2.7.1~~(1)~~**

**CLASSIFICATION OF ASPHALT ~~ROOF~~ SHINGLES ~~PER ASTM D 7158~~~~a~~**

|  |  |
| --- | --- |
| **~~NOMINAL DESIGN WIND SPEED,~~ *~~V~~~~asd~~*~~b~~****~~(mph)~~** | **~~CLASSIFICATION REQUIREMENT~~** |
| ~~85~~ | ~~D, G or H~~ |
| ~~90~~ | ~~D, G or H~~ |
| ~~100~~ | ~~G or H~~ |
| ~~110~~ | ~~G or H~~ |
| ~~120~~ | ~~G or H~~ |
| ~~130~~ | ~~H~~ |
| ~~140~~ | ~~H~~ |
| ~~150~~ | ~~H~~ |
| ~~For SI: 1 foot = 304.8 mm; 1 mph = 0.447 m/s.~~ | | | |
| ~~a. The standard calculations contained in ASTM D 7158 assume exposure category B or C and building height of 60 feet or less. Additional calculations are required for conditions outside of these assumptions.~~ | | | |
| ~~b.~~ *~~V~~~~asd~~* ~~shall be determined in accordance with Section 1609.3.1.~~ | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **MAXIMUM BASIC WIND SPEED FROM FIGURE 1609A, B, C** **or ASCE-7** | **Vasd** | **ASTM D 7158** | **ASTM D 3161** |
| 110 | 85 | D, G or H | ~~A,~~ D or F |
| 116 | 90 | D, G or H | ~~A,~~ D or F |
| 129 | 100 | G or H | ~~A,~~ D or F |
| 142 | 110 | G or H | F |
| 155 | 120 | G or H | F |
| 168 | 130 | H | F |
| 181 | 140 | H | F |
| 194 | 150 | H | F |

**TABLE 1507.2.7.1(2)**

**CLASSIFICATION OF ASPHALT SHINGLES PER ASTM D 3161**

Reserved.

|  |  |
| --- | --- |
| **~~NOMINAL DESIGN WIND SPEED,~~ *~~V~~~~asd~~*~~a~~ ~~(mph)~~** | **~~CLASSIFICATION REQUIREMENT~~** |
| ~~85~~ | ~~A, D or F~~ |
| ~~90~~ | ~~A, D or F~~ |
| ~~100~~ | ~~A, D or F~~ |
| ~~110~~ | ~~F~~ |
| ~~120~~ | ~~F~~ |
| ~~130~~ | ~~F~~ |
| ~~140~~ | ~~F~~ |
| ~~150~~ | ~~F~~ |
| ~~For SI: 1 mph = 0.447 m/s.~~ | | | |
| ~~a.~~ *~~V~~~~asd~~* ~~shall be determined in accordance with Section 1609.3.1.~~ | | | |
|  | | | |

***Section 1507 – Requirements for Roof Coverings. Change Section 1507.2.8 to read as shown:***

**1507.2.8 Underlayment application.** Underlayment shall be installed using one of the following methods: ~~For roof slopes from two units vertical in 12 units horizontal (17-percent slope) and up to four units vertical in 12 units horizontal (33-percent slope), underlayment shall be two layers applied in the following manner. Apply a minimum 19-inch-wide (483 mm) strip of underlayment felt parallel with and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment overlapping successive sheets 19 inches (483 mm), by fastened sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. For roof slopes of four units vertical in 12 units horizontal (33-percent slope) or greater, underlayment shall be one layer applied in the following manner. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal.~~

 1.      For roof slopes from two units vertical in 12 units horizontal (17-percent slope), and less than four units vertical in 12 units horizontal (33-percent slope). Underlayment shall comply with ASTM D 226, Type I or Type II or ASTM D 4869, Type II or Type IV or ASTM D 6757 and shall be two layers applied in the following manner. Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), and fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with one row in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm). Synthetic underlayment shall be fastened in accordance with this section and the manufacturer’s recommendations.

2.      For roof slopes of four units vertical in 12 units horizontal (33-percent slope) or greater. Underlayment shall comply with ASTM D 226, Type II or ASTM D 4869, Type IV or ASTM D 6757 and shall be one layer applied in the following manner. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm). Synthetic underlayment shall be fastened in accordance with this section and the manufacturer’s recommendations End laps shall be offset by 6 feet (1829 mm).

3.      As an alternative, the entire roof deck shall be covered with an approved self-adhering polymer modified bitumen sheet meeting [ASTM D 1970](javascript:vo();) or an approved self-adhering synthetic underlayment installed in accordance with the manufacturer’s installation instructions.

***Section 1507 – Requirements for Roof Coverings. Change Section 1507.2.8.1 to read as shown:***

**1507.2.8.1 High wind attachment.** Reserved. ~~Underlayment applied in areas subject to high winds [~~*~~V~~~~asd~~* ~~greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's instructions. Fasteners are to be applied along the overlap at a maximum spacing of 36 inches (914 mm) on center.   
Underlayment installed where~~ *~~V~~~~asd~~*~~, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II, ASTM D 4869 Type IV, or ASTM D 6757. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with Section 1507.2.8 except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gauge [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12 gauge [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of~~ ~~3~~~~/~~~~4~~ ~~inch (19.1 mm) into the roof sheathing.~~

**~~Exception:~~** ~~As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.~~

***Section 1507 – Requirements for Roof Coverings. Change Section 1507.2.8.2 to read as shown:***

**1507.2.8.2 Ice barrier.** Reserved. ~~In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24 inches (610 mm) inside the~~ *~~exterior wall~~* ~~line of the building.~~**~~Exception:~~** ~~Detached accessory structures that contain no conditioned floor area.~~

***Section 1507 – Requirements for Roof Coverings. Change Section 1507.2.9.1 to read as shown:***

**1507.2.9.1 Base and ~~cap~~ counter flashing.** Base and ~~cap~~ counter flashing shall be installed ~~in accordance with the manufacturer's instructions. Base flashing shall be of either corrosion-resistant metal of minimum nominal 0.019-inch (0.483 mm) thickness or mineral-surfaced roll roofing weighing a minimum of 77 pounds per 100 square feet (3.76 kg/m~~~~2~~~~). Cap flashing shall be corrosion-resistant metal of minimum nominal 0.019-inch (0.483 mm) thickness.~~ as follows:

1.      In accordance with manufacturer's installation instructions, or

2.      A continuous metal minimum 4? × 4? "L" flashing shall be set in approved flashing cement and set flush to base of wall and over the underlayment. Both horizontal and vertical metal flanges shall be fastened 6 inches (152 mm) on center with approved fasteners. All laps shall be a minimum of 4 inches (102 mm) fully sealed in approved flashing cement. Flashing shall start at the lower portion of roof to insure water-shedding capabilities of all metal laps. The entire edge of the horizontal flange shall be sealed covering all nail penetrations with approved flashing cement and membrane. Shingles will overlap the horizontal flange and shall be set in approved flashing cement.   
  
Base flashing shall be of either corrosion resistant metal with a minimum thickness provided in Table 1503.2 or mineral surface roll roofing weighing a minimum of 77 pounds per 100 square feet (3.76 kg/m2). Counter flashing shall be corrosion resistant metal with a minimum thickness provided in Table 1503.2.

***Section 1507 – Requirements for Roof Coverings. Change Section 1507.2.9.2 to read as shown:***

**1507.2.9.2 Valleys.** Valley linings shall be installed in accordance with the manufacturer's instructions before applying shingles. Valley linings of the following types shall be permitted:

1. For open valleys (valley lining exposed) lined with metal, the valley lining shall be at least ~~24~~ 16 inches (~~610~~ 406 mm) wide and of any of the corrosion-resistant metals in Table 150~~7~~3.2~~.9. 2~~.

2. For open valleys, valley lining of two plies of mineral-surfaced roll roofing complying with ASTM D 3909 or ASTM D 6380 Class M shall be permitted. The bottom layer shall be 18 inches (457 mm) and the top layer a minimum of 36 inches (914 mm) wide.

3. For closed valleys (valleys covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D 6380 Class S , and at least 36 inches (914 mm) wide or types as described in Item 1 or 2 above shall be permitted. Self-adhering polymer modified bitumen underlayment complying with ASTM D 1970 shall be permitted in lieu of the lining material.

***Table 1507.2.9.2. Delete to read as shown:***

**TABLE 1507.2.9.2**

**VALLEY LINING MATERIAL**

Reserved.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~MATERIAL~~** | **~~MINIMUM THICKNESS~~** | **~~GAGE~~** | **~~WEIGHT~~** | |
| ~~Aluminum~~ | ~~0.024 in.~~ | ~~—~~ | ~~—~~ | |
| ~~Cold-rolled copper~~ | ~~0.0216 in.~~ | ~~—~~ | ~~ASTM B 370, 16 oz. per square ft.~~ | |
| ~~Copper~~ | ~~—~~ | ~~—~~ | ~~16 oz~~ | |
| ~~Galvanized steel~~ | ~~0.0179 in.~~ | ~~26 (zinc-coated G90)~~ | ~~—~~ | |
| ~~High-yield copper~~ | ~~0.0162 in.~~ | ~~—~~ | ~~ASTM B 370, 12 oz. per square ft.~~ | |
| ~~Lead~~ | ~~—~~ | ~~—~~ | ~~2.5 pounds~~ | |
| ~~Lead-coated copper~~ | ~~0.0216 in.~~ | ~~—~~ | ~~ASTM B 101, 16 oz. per square ft.~~ | |
| ~~Lead-coated high-yield copper~~ | ~~0.0162 in.~~ | ~~—~~ | ~~ASTM B 101, 12 oz. per square ft.~~ | |
| ~~Painted terne~~ | ~~—~~ | ~~—~~ | ~~20 pounds~~ | |
| ~~Stainless steel~~ | ~~—~~ | ~~28~~ | ~~—~~ | |
| ~~Zinc alloy~~ | ~~0.027 in.~~ | ~~—~~ | ~~—~~ | |
| ~~For SI: 1 inch = 25.4 mm, 1 pound = 0.454 kg, 1 ounce = 28.35 g, 1 square foot = 0.093 m~~~~2~~~~.~~ | | | |

***Section 1507 – Requirements for Roof Coverings. Change Section 1507.2.9.3 to read as shown:***

**1507.2.9.3 Drip edge.** Provide drip edge at eaves and gables of shingle roofs. Overlap to be a minimum of ~~2~~ 3 inches (~~51~~ 76 mm). Eave drip edges shall extend ~~¼~~ 1/2 inch (~~6.4~~ 13 mm) below sheathing and extend back on the roof a minimum of 2 inches (51 mm). Drip edge at eaves shall be permitted to be installed either over or under the underlayment. If installed over the underlayment, there shall be a minimum 4 inches (51 mm) width of roof cement installed over the drip edge flange. Drip edge shall be mechanically fastened a maximum of 12 inches (305 mm) on center. Where the Vasd as determined in accordance with Section 1609.3.1 is 110 mph (177 km/h) or greater or the mean roof height exceeds 33 feet (10 058 mm), drip edges shall be mechanically fastened a maximum of 4 inches (102 mm) on center.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Section 1507.3 Clay and concrete tile. Change to read as shown:***  **1507.3 Clay and concrete tile.** The installation of clay and concrete tile shall comply with the provisions of this section.  **1507.3.1 Deck requirements.** Concrete and clay tile shall be installed only over solid sheathing ~~or~~ except where the roof covering is specifically designed and tested in accordance with Section 1609.5.2 to be applied over ~~spaced~~ structural spaced sheathing boards.  **1507.3.2 Deck slope.**  Clay and concrete roof tile shall be installed ~~on roof slopes of 2~~~~1~~~~/~~~~2~~ ~~units vertical in 12 units horizontal (21-percent slope) or greater. For roof slopes from 2~~~~1~~~~/~~~~2~~ ~~units vertical in 12 units horizontal (21-percent slope) to four units vertical in 12 units horizontal (33-percent slope), double underlayment application is required in accordance with Section 1507.3.3.~~ in accordance with the recommendations of FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Fifth Edition where the Vasd as determined in accordance with Section 1609.3.1 or the recommendations of RAS 118, 119 or 120.  **1507.3.3 Underlayment.** Unless otherwise noted, required underlayment shall conform to: ASTM D 226, Type II; ASTM D 2626, ASTM D 1970 or ASTM D 6380, Class M mineral-surfaced roll roofing. Underlayment shall be applied according to the tile manufacturer's installation instructions or the recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Fifth Edition where the basic wind speed, Vasd, is determined in accordance with Section 1609.3.1 or the recommendations of RAS 118, 119 or 120.  **1507.3.3.1 ~~Low-slope roofs~~ Slope and underlayment requirements.** Refer to FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Fifth Edition where the basic wind speed, Vasd, is determined in accordance with Section 1609.3.1 for underlayment and slope requirements for specific roof tile systems or the recommendations of RAS 118, 119 or 120.  ~~For roof slopes from 2~~~~1~~~~/~~~~2~~ ~~units vertical in 12 units horizontal (21-percent slope), up to four units vertical in 12 units horizontal (33-percent slope), underlayment shall be a minimum of two layers applied as follows:~~  ~~1. Starting at the eave, a 19-inch (483 mm) strip of underlayment shall be applied parallel with the eave and fastened sufficiently in place.~~  ~~2. Starting at the eave, 36-inch-wide (914 mm) strips of underlayment felt shall be applied overlapping successive sheets 19 inches (483 mm) and fastened sufficiently in place.~~  **1507.3.3.2 High-slope roofs.** Reserved. ~~For roof slopes of four units vertical in 12 units horizontal (33-percent slope) or greater, underlayment shall be a minimum of one layer of underlayment felt applied shingle fashion, parallel to, and starting from the eaves and lapped 2 inches (51 mm), fastened only as necessary to hold in place.~~  **1507.3.3.3 High wind attachment.** Reserved. ~~Underlayment applied in areas subject to high wind [~~*~~V~~~~asd~~* ~~greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.   Underlayment installed where~~ *~~V~~~~asd~~*~~, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with Sections 1507.3.3.1 and 1507.3.3.2 except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gauge [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12 gauge [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of~~ ~~3~~~~/~~~~4~~ ~~inch (19.1 mm) into the roof sheathing.~~  **~~Exception:~~** ~~As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.~~  **1507.3.4 Clay tile.** Clay roof tile shall comply with ASTM C 1167.  **1507.3.5 Concrete tile.** Concrete roof tile shall comply with ASTM C 1492.  **1507.3.6 Fasteners.** Tile fasteners shall be corrosion resistant and not less than 11 gage, 5/16-inch (8.0 mm) head, and of sufficient length to penetrate the deck a minimum of ~~¾~~ 0.75 inch (19.1 mm) or through the thickness of the deck, whichever is less or in accordance with the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Fifth Edition where the basic wind speed, Vasd, is determined in accordance with Section 1609.3.1 or in accordance with RAS 118, 119 or 120. Attaching wire for clay or concrete tile shall not be smaller than 0.083 inch (2.1 mm). ~~Perimeter fastening areas include three tile courses but not less than 36 inches (914 mm) from either side of hips or ridges and edges of eaves and gable rakes.~~  **1507.3.7 Attachment.** Clay and concrete roof tiles shall be fastened in accordance with ~~Table 1507.3.7~~Section 1609 or in accordance with FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Fifth Edition where the basic wind speed, Vasd, is determined in accordance with Section 1609.3.1. .  ***Table 1507.3.7. Delete to read as shown:***  **TABLE 1507.3.7**  **CLAY AND CONCRETE TILE ATTACHMENTa, b, c**  Reserved.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **~~GENERAL - CLAY OR CONCRETE ROOF TILE~~** | | | | | | **~~Maximum Nominal Design Wind Speed,~~ *~~V~~~~asd~~*~~f~~ ~~(mph)~~** | **~~Mean roof height  (feet)~~** | **~~Roof slope < 3:12~~** | **~~Roof slope 3:12 and over~~** | | | ~~85~~ | ~~0-60~~ | ~~One fastener per tile. Flat tile without vertical laps, two fasteners per tile.~~ | ~~Two fasteners per tile. Only one fastener on slopes of 7:12 and less for tiles with installed weight exceeding 7.5 lbs./sq. ft. having a width no greater than 16 inches.~~ | | | ~~100~~ | ~~0-40~~ | | ~~100~~ | ~~>40-60~~ | ~~The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. All rake tiles shall be nailed with two nails. The nose of all ridge, hip and rake tiles shall be set in a bead of roofer's mastic.~~ | | | | ~~110~~ | ~~0-60~~ | ~~The fastening system shall resist the wind forces in Section 1609.5.3.~~ | | | | ~~120~~ | ~~0-60~~ | ~~The fastening system shall resist the wind forces in Section 1609.5.3.~~ | | | | ~~130~~ | ~~0-60~~ | ~~The fastening system shall resist the wind forces in Section 1609.5.3.~~ | | | | ~~All~~ | ~~>60~~ | ~~The fastening system shall resist the wind forces in Section 1609.5.3.~~ | | | | **~~INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS~~~~d, e~~  ~~(Installations on spaced/solid sheathing with battens or spaced sheathing)~~** | | | | | | **~~Maximum Nominal Design Wind Speed,~~ *~~V~~~~asd~~*~~f~~ ~~(mph)~~** | **~~Mean roof height  (feet)~~** | **~~Roof slope < 5:12~~** | **~~Roof slope 5:12 < 12:12~~** | **~~Roof slope  12:12 and over~~** | | ~~85~~ | ~~0-60~~ | ~~Fasteners are not required. Tiles with installed weight less than 9 lbs./sq. ft. require a minimum of one fastener per tile.~~ | ~~One fastener per tile every other row. All perimeter tiles require one fastener. Tiles with installed weight less than 9 lbs./sq. ft. require a minimum of one fastener per tile.~~ | ~~One fastener required for every tile. Tiles with installed weight less than 9 lbs./sq. ft. require a minimum of one fastener per tile.~~ | | ~~100~~ | ~~0-40~~ | | ~~100~~ | ~~>40-60~~ | ~~The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. All rake tiles shall be nailed with two nails The nose of all ridge, hip and rake tiles shall be set in a bead of roofer's mastic.~~ | | | | ~~110~~ | ~~0-60~~ | ~~The fastening system shall resist the wind forces in Section 1609.5.3.~~ | | | | ~~120~~ | ~~0-60~~ | ~~The fastening system shall resist the wind forces in Section 1609.5.3.~~ | | | | ~~130~~ | ~~0-60~~ | ~~The fastening system shall resist the wind forces in Section 1609.5.3.~~ | | | | ~~All~~ | ~~>60~~ | ~~The fastening system shall resist the wind forces in Section 1609.5.3.~~ | | | | **~~INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS  (Installations on solid sheathing without battens)~~** | | | | | | **~~Maximum Nominal Design Wind Speed,~~ *~~V~~~~asd~~*~~f~~ ~~(mph)~~** | **~~Mean roof height  (feet)~~** | **~~All roof slopes~~** | | | | ~~85~~ | ~~0-60~~ | ~~One fastener per tile.~~ | | | | ~~100~~ | ~~0-40~~ | ~~One fastener per tile.~~ | | | | ~~100~~ | ~~> 40-60~~ | ~~The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. All rake tiles shall be nailed with two nails The nose of all ridge, hip and rake tiles shall be set in a bead of roofer's mastic.~~ | | | | ~~110~~ | ~~0-60~~ | ~~The fastening system shall resist the wind forces in Section 1609.5.3.~~ | | | | ~~120~~ | ~~0-60~~ | ~~The fastening system shall resist the wind forces in Section 1609.5.3.~~ | | | | ~~130~~ | ~~0-60~~ | ~~The fastening system shall resist the wind forces in Section 1609.5.3.~~ | | | | ~~All~~ | ~~> 60~~ | ~~The fastening system shall resist the wind forces in Section 1609.5.3.~~ | | | | ~~For SI: 1 inch =25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 4.882 kg/m~~~~2~~~~.~~ | | | | | | ~~a. Minimum fastener size. Corrosion-resistant nails not less than No. 11 gage with~~ ~~5~~~~/~~~~16~~~~-inch head. Fasteners shall be long enough to penetrate into the sheathing~~ ~~3~~~~/~~~~4~~ ~~inch or through the thickness of the sheathing, whichever is less. Attaching wire for clay and concrete tile shall not be smaller than 0.083 inch.~~ | | | | | | ~~b. Snow areas. A minimum of two fasteners per tile are required or battens and one fastener.~~ | | | | | | ~~c. Roof slopes greater than 24:12. The nose of all tiles shall be securely fastened.~~ | | | | | | ~~d. Horizontal battens. Battens shall be not less than 1 inch by 2 inch nominal. Provisions shall be made for drainage by a minimum of~~ ~~1~~~~/~~~~8~~~~-inch riser at each nail or by 4-foot-long battens with at least a~~ ~~1~~~~/~~~~2~~~~-inch separation between battens. Horizontal battens are required for slopes over 7:12.~~ | | | | | | ~~e. Perimeter fastening areas include three tile courses but not less than 36 inches from either side of hips or ridges and edges of eaves and gable rakes.~~ | | | | | | ~~f.~~ *~~V~~~~asd~~* ~~shall be determined in accordance with Section 1609.3.1.~~ | | | | |   **1507.3.8 Application.** Tile shall be applied according to the manufacturer's installation instructions or recommendations of the FRSA/TRI  Florida High Wind Concrete and Clay Roof Tile Installation Manual, Fifth Edition where the basic wind speed, Vasd, is determined in accordance with Section 1609.3.1 or the recommendation of RAS 118, 119 or 120.~~,~~ ~~based on the following:~~  ~~1. Climatic conditions.~~  ~~2. Roof slope.~~  ~~3. Underlayment system.~~  ~~4. Type of tile being installed.~~  **1507.3.9 Flashing.** At the juncture of the roof vertical surfaces, flashing and counterflashing shall be provided in accordance with the manufacturer's installation instructions ~~, and where of metal, shall not be less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal. The valley flashing shall extend at least 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) underlayment of either one layer of Type I underlayment running the full length of the valley, or a self-adhering polymer-modified bitumen sheet complying with ASTM D 1970, in addition to other required underlayment. In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing underlayment shall be solid cemented to the roofing underlayment for slopes under seven units vertical in 12 units horizontal (58-percent slope) or self-adhering polymer-modified bitumen sheet shall be installed~~ or the recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Fifth Edition where the basic wind speed, Vasd, is determined in accordance with Section 1609.3.1 or the recommendation of RAS 118, 119 or 120. |
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***Section 1507 – Requirements for Roof Coverings. Change Section 1507.4 to read as shown:***

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| **1507.4 Metal roof panels.** The installation of metal roof panels shall comply with the provisions of this section.  **1507.4.1 Deck requirements.** Metal roof panel roof coverings shall be applied to a solid or closely fitted deck, except where the roof covering is specifically designed to be applied to spaced supports.  **1507.4.2 Deck slope.** Minimum slopes for metal roof panels shall comply with the following:  1. The minimum slope for lapped, nonsoldered seam metal roofs without applied lap sealant shall be three units vertical in 12 units horizontal (25-percent slope).  2. The minimum slope for lapped, nonsoldered seam metal roofs with applied lap sealant shall be one-half unit vertical in 12 units horizontal (4-percent slope). Lap sealants shall be applied in accordance with the *approved* manufacturer's installation instructions.  3. The minimum slope for standing seam of roof systems shall be one-quarter unit vertical in 12 units horizontal (2-percent slope).  **1507.4.3 Material standards.** Metal-sheet roof covering systems that incorporate supporting structural members shall be designed in accordance with [Chapter 22](javascript:Next('./icod_ibc_2012_22_sec001.htm');). Metal-sheet roof coverings installed over structural decking shall comply with Table 1507.4.3(1). The materials used for metal-sheet roof coverings shall be naturally corrosion resistant or provided with corrosion resistance in accordance with the standards and minimum thicknesses shown in Table 1507.4.3(2).  ***Table 1507.4.3(1). Replace to read as shown:***  **TABLE 1507.4.3(1)**  **METAL ROOF COVERINGS**   |  |  | | --- | --- | | **~~ROOF COVERING TYPE~~** | **~~STANDARD APPLICATION  RATE/THICKNESS~~** | | ~~Aluminum~~ | ~~ASTM B 209, 0.024 inch minimum thickness for roll-formed panels and 0.019 inch minimum thickness for press-formed  shingles.~~ | | ~~Aluminum-zinc alloy coated steel~~ | ~~ASTM A 792 AZ 50~~ | | ~~Cold-rolled copper~~ | ~~ASTM B 370 minimum 16 oz./sq. ft. and 12 oz./sq. ft. high yield copper for metal-sheet roof covering systems: 12 oz./sq. ft. for preformed metal shingle systems.~~ | | ~~Copper~~ | ~~16 oz./sq. ft. for metal-sheet roof-covering systems; 12 oz./sq. ft. for preformed metal shingle systems.~~ | | ~~Galvanized steel~~ | ~~ASTM A 653 G-90 zinc-coated~~~~a~~~~.~~ | | ~~Hard lead~~ | ~~2 lbs./sq. ft.~~ | | ~~Lead-coated copper~~ | ~~ASTM B 101~~ | | ~~Prepainted steel~~ | ~~ASTM A 755~~ | | ~~Soft lead~~ | ~~3 lbs./sq. ft.~~ | | ~~Stainless steel~~ | ~~ASTM A 240, 300 Series Alloys~~ | | ~~Steel~~ | ~~ASTM A 924~~ | | ~~Terne and terne-coated stainless~~ | ~~Terne coating of 40 lbs. per double base box, field painted where applicable in accordance with manufacturer's installation instructions.~~ | | ~~Zinc~~ | ~~0.027 inch minimum thickness; 99.995% electrolytic high grade zinc with alloy additives of copper (0.08% - 0.20%), titanium (0.07% - 0.12%) and aluminum (0.015%).~~ |      |  |  |  | | --- | --- | --- | | **ROOF COVERING TYPE** | **STANDARD** | **STANDARD APPLICATION**  **RATE/THICKNESS** | | Aluminum | ASTM B 209 | 0.024 inch minimum thickness for roll-formed panels and 0.019 inch minimum thickness for press-formed shingles. | | Aluminum-zinc coated steel | ASTM A 792 | 0.013 inch minimum thickness, AZ 50 (coated minimum application rate) | | Cold-rolled copper | ASTM B 370 | Minimum 16 oz/sq. ft. and 12 oz./sq. ft. high yield copper for metal-sheet roof covering systems: 12 oz/sq. ft. for preformed metal shingle systems. | | Copper | ASTM B 370 | 16 oz./sq. ft. for metal-sheet roof-covering systems; 12 oz./sq. ft. for preformed metal shingle systems. | | Galvanized steel | ASTM A 653 | 0.013 inch minimum thickness,G-90 zinc-coateda. | | Hard lead | - | 2 lbs./sq. ft. | | Lead-coated copper | ASTM B 101 | - | | Prepainted steel | ASTM A 755 | - | | Soft lead | 3 lbs./sq. ft. |  | | Stainless steel | ASTM A 240 | 300 Series Alloys | | Steel | ASTM A 924/ ASTM A 924M | - | | Terne and terne-coated stainless | - | Terne coating of 40 lbs. per double base box, field painted where applicable in accordance with manufacturer's installation instructions. | | Zinc | - | 0.027 inch minimum thickness; 99.995% electrolytic high grade zinc with alloy additives of copper (0.08% - 0.20%), titanium (0.07% - 0.12%) and aluminum (0.015%). | | For SI: 1 ounce per square foot = 0.0026 kg/m2, | | | | 1 pound per square foot = 4.882 kg/m2, | | | | 1 inch = 25.4 mm, 1 pound = 0.454 kg. | | | | a. For Group U buildings, the minimum coating thickness for ASTM A 653 galvanized steel roofing shall be G-60. | | |   **TABLE 1507.4.3(2)**  **MINIMUM CORROSION RESISTANCE**  (No change)  **1507.4.4 Attachment.** Metal roof panels shall be secured to the supports in accordance with the *approved* manufacturer's fasteners. In the absence of manufacturer recommendations, the following fasteners shall be used:  1. Galvanized fasteners shall be used for steel roofs.  2. Copper, brass, bronze, copper alloy or 300 series stainless-steel fasteners shall be used for copper roofs.  3. Aluminum-zinc coated fasteners are acceptable for aluminum-zinc coated roofs.  4. Stainless-steel fasteners are acceptable for all types of metal roofs.  **1507.4.5 Underlayment and high wind.** Reserved. ~~Underlayment applied in areas subject to high winds [~~*~~V~~~~asd~~* ~~greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.  Underlayment installed where V~~*~~asd~~*~~, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II, ASTM D 4869 Type IV, or ASTM D 1970. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gauge [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12 gauge [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of~~ ~~3~~~~/~~~~4~~ ~~inch (19.1 mm) into the roof sheathing.~~  **~~Exception:~~** ~~As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.~~  **1507.4.5.1 Underlayment.** Underlayment shall comply with ASTM D 226, Type I or Type II or ASTM D 4869, Type II or Type IV or ASTM D 1970 or ASTM D 6757.  **1507.4.5.2 Underlayment Application.** Underlayment shall be installed using one of the following methods:   1. Two layer underlayment shall comply with ASTM D 226, Type I or Type II or ASTM D 4869, Type II or Type IV or ASTM D 6757: Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), and fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with one row in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm). Synthetic underlayment shall be fastened in accordance with this section and the manufacturer’s recommendations. 2. One layer underlayment shall comply with ASTM D 226, Type II or ASTM D 4869, Type IV or ASTM D 6757: Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm). Synthetic underlayment shall be fastened in accordance with this section and the manufacturer’s recommendations End laps shall be offset by 6 feet (1829 mm). 3. As an alternative, the entire roof deck shall be covered with an approved self-adhering polymer modified bitumen sheet meeting [ASTM D 1970](javascript:vo();) or an approved self-adhering synthetic underlayment installed in accordance with the manufacturer’s installation instructions. | |

***Section 1507.5.2. Add a section to read as shown:***

**1507.5.2.1** Underlayment shall be installed as per manufacturer's installation guidelines.

***Section 1507.5.3 Underlayment. Change to read as shown:***

**1507.5.3 Underlayment.**Underlayment shall comply with ASTM D 226, Type I or Type II or ASTM D 4869, Type II or Type IV or ASTM D 1970 or ASTM D 6757.

**1507.5.3.1 Underlayment and high wind.** Reserved. ~~Underlayment applied in areas subject to high winds [~~*~~V~~~~asd~~* ~~greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.   
Underlayment installed where~~ *~~V~~~~asd~~*~~, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch spacing (152 mm) at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gauge [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12 gauge [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of~~ ~~3~~~~/~~~~4~~ ~~inch (19.1 mm) into the roof sheathing.~~  **~~Exception:~~** ~~As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.~~

**1507.5.3.2 Underlayment Application.** Underlayment shall be installed using one of the following methods:

1. Two layer underlayment shall comply with ASTM D 226, Type I or Type II or ASTM D 4869, Type II or Type IV or ASTM D 6757: Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), and fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with one row in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm). Synthetic underlayment shall be fastened in accordance with this section and the manufacturer’s recommendations.
2. One layer underlayment shall comply with ASTM D 226, Type II or ASTM D 4869, Type IV or ASTM D 6757: Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm). Synthetic underlayment shall be fastened in accordance with this section and the manufacturer’s recommendations End laps shall be offset by 6 feet (1829 mm).
3. As an alternative, the entire roof deck shall be covered with an approved self-adhering polymer modified bitumen sheet meeting [ASTM D 1970](javascript:vo();) or an approved self-adhering synthetic underlayment installed in accordance with the manufacturer’s installation instructions.

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| ***Section 1507.5.4 Ice barrier. Change to read as shown:***  **1507.5.4 Ice barrier.** Reserved.~~In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24 inches (610 mm) inside the exterior wall line of the building.~~ **~~Exception:~~** ~~Detached accessory structures that contain no conditioned floor area.~~  ***Section 1507 – Requirements for Roof Coverings. Change Section 1507.5.7 to read as shown:***  **1507.5.7 Flashing.** Roof valley flashing shall be of corrosion-resistant metal of the same material as the roof covering or shall comply with the standards in Table 1507.4.3(1). The valley flashing shall extend at least 8 inches (203 mm) from the centerline each way and shall have a splash diverter rib not less than ~~3~~~~/~~~~4~~ 0.75 inch (19.1 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). ~~In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing shall have a 36-inch-wide (914 mm) underlayment directly under it consisting of either one layer of underlayment running the full length of the valley or a self-adhering polymer-modified bitumen sheet complying with ASTM D 1970, in addition to underlayment required for metal roof shingles. The metal valley flashing underlayment shall be solidly cemented to the roofing underlayment for roof slopes under seven units vertical in 12 units horizontal (58-percent slope) or self-adhering polymer-modified bitumen sheet shall be installed.~~ |

***Section 1507 – Requirements for Roof Coverings. Change Section 1507.6 to read as shown:***

**1507.6 Mineral-surfaced roll roofing.** The installation of mineral-surfaced roll roofing shall comply with this section.

**1507.6.1 Deck requirements.** Mineral-surfaced roll roofing shall be fastened to solidly sheathed roofs.

**1507.6.2 Deck slope.** Mineral-surfaced roll roofing shall not be applied on roof slopes below one unit vertical in 12 units horizontal (8-percent slope).

**1507.6.3 Underlayment.** Underlayment shall comply with ASTM D 226, Type I or Type II, ASTM D 4869, Type II or Type IV or ASTM D 1970 or ASTM D 6757.

**1507.6.3.1 Underlayment and high wind.** ~~Underlayment applied in areas subject to high winds [~~*~~V~~~~asd~~* ~~greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.   
  
Underlayment installed where~~ *~~V~~~~asd~~*~~, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch spacing (152 mm) at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gauge [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12 gauge [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of~~ ~~3~~~~/~~~~4~~ ~~inch (19.1 mm) into the roof sheathing.~~

**~~Exception:~~** ~~As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.~~ Reserved.

**1507.6.3.2 Underlayment Application.** Underlayment shall be installed using one of the following methods:

1.      Two layer underlayment shall comply with ASTM D 226, Type I or Type II or ASTM D 4869, Type II or Type IV or ASTM D 6757: Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), and fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with one row in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm). Synthetic underlayment shall be fastened in accordance with this section and the manufacturer’s recommendations.

2.      One layer underlayment shall comply with ASTM D 226, Type II or ASTM D 4869, Type IV or ASTM D 6757: Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm). Synthetic underlayment shall be fastened in accordance with this section and the manufacturer’s recommendations End laps shall be offset by 6 feet (1829 mm).

3.      As an alternative, the entire roof deck shall be covered with an approved self-adhering polymer modified bitumen sheet meeting [ASTM D 1970](javascript:vo();) or an approved self-adhering synthetic underlayment installed in accordance with the manufacturer’s installation instructions.

**1507.6.4 Ice barrier.** ~~In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24 inches (610 mm) inside the exterior wall line of the building.~~

**~~Exception:~~** ~~Detached accessory structures that contain no conditioned floor area.~~ Reserved.

**1507.6.5 Material standards.** Mineral-surfaced roll roofing shall conform to ASTM D 3909 or ASTM D 6380 Class M or Class WS.

***Section 1507 – Requirements for Roof Coverings. Change Section 1507.7 to read as shown:***

**1507.7 Slate shingles.** The installation of slate shingles shall comply with the provisions of this section.

**1507.7.1 Deck requirements.** Slate shingles shall be fastened to solidly sheathed roofs.

**1507.7.2 Deck slope.** Slate shingles shall only be used on slopes of four units vertical in 12 units horizontal (4:12) or greater.

**1507.7.3 Underlayment.** Underlayment shall comply with ASTM D 226, Type I or Type II, ASTM D 4869, Type II or Type IV or ASTM D 1970 or ASTM D 6757.

**1507.7.3.1 Underlayment and high wind.** Reserved.  
~~Underlayment applied in areas subject to high winds [~~*~~V~~~~asd~~* ~~greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.   
  
Underlayment installed where~~ *~~V~~~~asd~~*~~, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch spacing (152 mm) at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gauge [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12 gauge [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of~~ ~~3~~~~/~~~~4~~ ~~inch (19.1 mm) into the roof sheathing.~~  **~~Exception:~~** ~~As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.~~

**1507.7.3.2 Underlayment Application.** Underlayment shall be installed using one of the following methods:

1.      Two layer underlayment shall comply with ASTM D 226, Type I or Type II or ASTM D 4869, Type II or Type IV or ASTM D 6757: Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), and fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with one row in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm). Synthetic underlayment shall be fastened in accordance with this section and the manufacturer’s recommendations.

2.      One layer underlayment shall comply with ASTM D 226, Type II or ASTM D 4869, Type IV or ASTM D 6757: Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm). Synthetic underlayment shall be fastened in accordance with this section and the manufacturer’s recommendations End laps shall be offset by 6 feet (1829 mm).

3.      As an alternative, the entire roof deck shall be covered with an approved self-adhering polymer modified bitumen sheet meeting ASTM D 1970 or an approved self-adhering synthetic underlayment installed in accordance with the manufacturer’s installation instructions.

**1507.7.4 Ice barrier.** Reserved. ~~In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall extend from the lowest edges of all roof surfaces to a point at least 24 inches (610 mm) inside the exterior wall line of the building.~~

**~~Exception:~~** ~~Detached accessory structures that contain no conditioned floor area.~~

**1507.7.5 Material standards.** Slate shingles shall comply with ASTM C 406.

**1507.7.6 Application.** Minimum headlap for slate shingles shall be in accordance with Table 1507.7.6. Slate shingles shall be secured to the roof with two fasteners per slate.

**TABLE 1507.7.6**

**SLATE SHINGLE HEADLAP**

|  |  |
| --- | --- |
| **SLOPE** | **HEADLAP  (inches)** |
| 4:12 < slope < 8:12 | 4 |
| 8:12 < slope < 20:12 | 3 |
| slope = 20:12 | 2 |
| For SI: 1 inch = 25.4 mm. |

**1507.7.7 Flashing.** Flashing and counterflashing shall be made with sheet metal. Valley flashing shall be a minimum of ~~15~~ 16 inches (381 mm) wide. Valley and flashing metal shall be a minimum ~~uncoated thickness of 0.0179-inch (0.455 mm) zinc-coated G90~~ thickness provided in Table 1503.2 nonferrous metal or stainless steel. ~~Chimneys, stucco or brick walls shall have a minimum of two plies of felt for a cap flashing consisting of a 4-inch-wide (102 mm) strip of felt set in plastic cement and extending 1 inch (25 mm) above the first felt and a top coating of plastic cement. The felt shall extend over the base flashing 2 inches (51 mm).~~

***Section 1507 – Requirements for Roof Coverings. Change Section 1507.8 to read as shown:***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1507.8 Wood shingles.** The installation of wood shingles shall comply with the provisions of this section and Table 1507.8.  **TABLE 1507.8**  **WOOD SHINGLE AND SHAKE INSTALLATION**   |  |  |  |  | | --- | --- | --- | --- | | **ROOF ITEM** | **WOOD SHINGLES** | | **WOOD SHAKES** | | 1. Roof slope | Wood shingles shall be installed on slopes of three units vertical in 12 units horizontal (3:12) or greater. | | Wood shakes shall be installed on slopes of four units vertical in 12 units horizontal (4:12) or greater. | | 2. Deck requirement | | | | | Temperate climate | Shingles shall be applied to roofs with solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall not be less than 1” × 4” nominal dimensions and shall be spaced on center equal to the weather exposure to coincide with the placement of fasteners. | | Shakes shall be applied to roofs with solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall not be less than 1” × 4” nominal dimensions and shall be spaced on center equal to the weather exposure to coincide with the placement of fasteners. When 1” × 4” spaced sheathing is installed at 10 inches, boards must be installed between the sheathing boards. | | In areas where the average daily temperature in January is 25°F or less or where there is a possibility of ice forming along the eaves causing a backup of water. | Solid sheathing required. | | Solid sheathing is required. | | 3. Interlayment | No requirements. | | Interlayment shall comply with ASTM D 226, Type 1. | | 4. Underlayment |  | |  | | Temperate climate | Underlayment shall comply with ASTM D 226, Type 1. | | Underlayment shall comply with ASTM D 226, Type 1. | | In areas where there is a possibility of ice forming along the eaves causing a backup of water. | An ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall extend from the eave's edge to a point at least 24 inches inside the exterior wall line of the building. | | An ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall extend from the lowest edges of all roof surfaces to a point at least 24 inches inside the exterior wall line of the building. | | 5. Application |  | |  | | Attachment | Fasteners for wood shingles shall be hot-dipped galvanized or Type 304 (Type 316 for coastal areas) stainless steel with a minimum penetration of 0.75 inch into the sheathing. For sheathing less than 0.5 inch thick, the fasteners shall extend through the sheathing. | | Fasteners for wood shakes shall be hot-dipped galvanized or Type 304 (Type 316 for coastal areas) with a minimum penetration of 0.75 inch into the sheathing. For sheathing less than 0.5 inch thick, the fasteners shall extend through the sheathing. | | No. of fasteners | Two per shingle. | | Two per shake. | | Exposure | Weather exposures shall not exceed those set forth in Table 1507.8.7. | | Weather exposures shall not exceed those set forth in Table 1507.9.8. | | Method | Shingles shall be laid with a side lap of not less than 1.5 inches between joints in courses, and no two joints in any three adjacent courses shall be in direct alignment. Spacing between shingles shall be 0.25 to 0.375 inch. | | Shakes shall be laid with a side lap of not less than 1.5 inches between joints in adjacent courses. Spacing between shakes shall not be less than 0.375 inch or more than 0.625 inch for shakes and taper sawn shakes of naturally durable wood and shall be 0.25 to 0.375 inch for preservative-treated taper sawn shakes. | | Flashing | In accordance with Section 1507.8.8. | | In accordance with Section 1507.9.9. | |  | |     For SI: 1 inch = 25.4 mm, °C = [(°F) - 32]/1.8.  **1507.8.1 Deck requirements.** Wood shingles shall be installed on solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall not be less than 1-inch by 4-inch (25 mm by 102 mm) nominal dimensions and shall be spaced on centers equal to the weather exposure to coincide with the placement of fasteners.  **1507.8.1.1 Solid sheathing required.** Reserved. ~~Solid sheathing is required in areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water.~~  **1507.8.2 Deck slope.** Wood shingles shall be installed on slopes of three units vertical in 12 units horizontal (25-percent slope) or greater.  **1507.8.3 Underlayment.** Underlayment shall comply with ASTM D 226, Type I or Type II or ASTM D 4869 Type II or IV.  **1507.8.3.1 Underlayment and high wind.** Reserved. ~~Underlayment applied in areas subject to high winds [~~*~~V~~~~asd~~* ~~greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.  Underlayment installed where~~ *~~V~~~~asd~~*~~, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch spacing (152 mm) at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gauge [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12 gauge [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of~~ ~~3~~~~/~~~~4~~ ~~inch (19.1 mm) into the roof sheathing.~~  **~~Exception:~~** ~~As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.~~  **1507.8.3.2 Underlayment Application.** Underlayment shall be installed using one of the following methods:   1.      Two layer underlayment shall comply with ASTM D 226, Type I or Type II or ASTM D 4869, Type II or Type IV: Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), and fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with one row in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm).  2.      One layer underlayment shall comply with ASTM D 226, Type II or ASTM D 4869, Type IV: Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm). End laps shall be offset by 6 feet (1829 mm).  **1507.8.4 Ice barrier.** Reserved. ~~In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24 inches (610 mm) inside the exterior wall line of the building.~~  **~~Exception:~~** ~~Detached accessory structures that contain no conditioned floor area.~~  **1507.8.5 Material standards.** Wood shingles shall be of naturally durable wood and comply with the requirements of Table 1507.8.5.  **TABLE 1507.8.5**  **WOOD SHINGLE MATERIAL REQUIREMENTS**     |  |  |  |  | | --- | --- | --- | --- | | **MATERIAL** | **APPLICABLE  MINIMUM GRADES** | | **GRADING RULES** | | Wood shingles of naturally  durable wood | 1, 2 or 3 | | CSSB | | CSSB = Cedar Shake and Shingle Bureau | |   **1507.8.6 Attachment.** Fasteners for wood shingles shall be corrosion resistant with a minimum penetration of 3/4 inch (19.1 mm) into the sheathing. For sheathing less than 1/2 inch (12.7 mm) in thickness, the fasteners shall extend through the sheathing. Each shingle shall be attached with a minimum of two fasteners.  **1507.8.7 Application.** Wood shingles shall be laid with a side lap not less than 11/2 inches (38 mm) between joints in adjacent courses, and not be in direct alignment in alternate courses. Spacing between shingles shall be 1/4 to 3/8 inches (6.4 to 9.5 mm). Weather exposure for wood shingles shall not exceed that set in Table 1507.8.7.  **TABLE 1507.8.7**  **WOOD SHINGLE WEATHER EXPOSURE AND ROOF SLOPE**   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **ROOFING MATERIAL** | **LENGTH (inches)** | **GRADE** | | **EXPOSURE (inches)** | | | **3:12 pitch  to < 4:12** | **4:12 pitch or steeper** | | Shingles of naturally durable wood | 16 | No. 1  No. 2  No. 3 | | 3.75  3.5  3 | 5  4  3.5 | | 18 | No. 1  No. 2  No. 3 | | 4.25  4  3.5 | 5.5  4.5  4 | | 24 | No. 1  No. 2  No. 3 | | 5.75  5.5  5 | 7.5  6.5  5.5 | | For SI: 1 inch = 25.4 mm. | | |   **1507.8.8 Flashing.** At the juncture of the roof and vertical surfaces, flashing and counterflashing shall be provided in accordance with the manufacturer's installation instructions, and where of metal, ~~shall not be less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal~~ comply with Table 1503.2. The valley flashing shall extend at least 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) layer of underlayment of either one layer of Type I underlayment running the full length of the valley or a self-adhering polymer-modified bitumen sheet complying with ASTM D 1970, in addition to other required underlayment~~. In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing underlayment shall be solidly cemented to the roofing underlayment for slopes under seven units vertical in 12 units horizontal (58-percent slope) or self-adhering polymer-modified bitumen sheet shall be installed.~~ |
|  |

***Change Section 1507.9 to read as shown:***

**1507.9 Wood shakes.** The installation of wood shakes shall comply with the provisions of this section and Table 1507.8.

**1507.9.1 Deck requirements.** Wood shakes shall only be used on solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall not be less than 1-inch by 4-inch (25 mm by 102 mm) nominal dimensions and shall be spaced on centers equal to the weather exposure to coincide with the placement of fasteners. Where 1-inch by 4-inch (25 mm by 102 mm) spaced sheathing is installed at 10 inches (254 mm) o.c., additional 1-inch by 4-inch (25 mm by 102 mm) boards shall be installed between the sheathing boards.

**1507.9.1.1 Solid sheathing required.** Reserved.  
~~Solid sheathing is required in areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water.~~

**1507.9.2 Deck slope.** Wood shakes shall only be used on slopes of four units vertical in 12 units horizontal (33-percent slope) or greater.

**1507.9.3 Underlayment.** Underlayment shall comply with ASTM D 226, Type I or Type II or ASTM D 4869, Type II or IV.

**1507.9.3.1 Underlayment and high wind.** Reserved.  
~~Underlayment applied in areas subject to high winds [~~*~~V~~~~asd~~* ~~greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.   
  
Underlayment installed where~~ *~~V~~~~asd~~*~~, in accordance with Section 1609.3.1, equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch spacing (152 mm) at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25 mm) with a thickness of at least 32-gauge [0.0134 inch (0.34 mm)] sheet metal. The cap nail shank shall be a minimum of 12 gauge [0.105 inch (2.67 mm)] with a length to penetrate through the roof sheathing or a minimum of~~ ~~3~~~~/~~~~4~~ ~~inch (19.1 mm) into the roof sheathing.~~  **~~Exception:~~** ~~As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.~~

**1507.9.3.2 Underlayment Application.** Underlayment shall be installed using one of the following methods:

 1.      Two layer underlayment shall comply with ASTM D 226, Type I or Type II or ASTM D 4869, Type II or Type IV: Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), and fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with one row in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm).

 2.      One layer underlayment shall comply with ASTM D 226, Type II or ASTM D 4869, Type IV: Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 2 inches (51 mm), fastened with 1 inch (25 mm) round plastic cap, metal cap nails or nails and tin-tabs attached to a nailable deck with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c. (305 mm), and one row at the overlaps fastened 6 in. o.c. (152 mm). End laps shall be offset by 6 feet (1829 mm).

**1507.9.4 Ice barrier.** Reserved. ~~In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier that consists of at least two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point at least 24 inches (610 mm) inside the exterior wall line of the building.~~  **~~Exception:~~** ~~Detached accessory structures that contain no conditioned floor area.~~

**1507.9.5 Interlayment.** Interlayment shall comply with ASTM D 226, Type I.

**1507.9.6 Material standards.** Wood shakes shall comply with the requirements of Table 1507.9.6.

**1507.9.7 Attachment.** Fasteners for wood shakes shall be corrosion resistant with a minimum penetration of 3/4 inch (19.1 mm) into the sheathing. For sheathing less than1/2 inch (12.7 mm) in thickness, the fasteners shall extend through the sheathing. Each shake shall be attached with a minimum of two fasteners.

**TABLE 1507.9.6**

**WOOD SHAKE MATERIAL REQUIREMENTS**

|  |  |  |  |
| --- | --- | --- | --- |
| **MATERIAL** | **MINIMUM GRADES** | | **APPLICABLE GRADING RULES** |
| Wood shakes of naturally durable wood | 1 | | CSSB |
| Taper sawn shakes of naturally durable wood | 1 or 2 | | CSSB |
| Preservative-treated shakes and shingles of naturally durable wood | 1 | | CSSB |
| Fire-retardant-treated shakes and shingles of naturally durable wood | 1 | | CSSB |
| Preservative-treated taper sawn shakes of Southern pine treated in accordance with AWPA U1 (Commodity Specification A, Use Category 3B and Section 5.6) | 1 or 2 | | TFS |
| CSSB = Cedar Shake and Shingle Bureau. | |
| TFS = Forest Products Laboratory of the Texas Forest Services. | |
|  | | | | |
|  | | | | |

**1507.9.8 Application.** Wood shakes shall be laid with a side lap not less than 11/2 inches (38 mm) between joints in adjacent courses. Spacing between shakes in the same course shall be 3/8 to 5/8 inches (9.5 to 15.9 mm) for shakes and taper sawn shakes of naturally durable wood and shall be 1/4 to 3/8 inch (6.4 to 9.5 mm) for preservative taper sawn shakes. Weather exposure for wood shakes shall not exceed those set in Table 1507.9.8.

**1507.9.9 Flashing.** At the juncture of the roof and vertical surfaces, flashing and counterflashing shall be provided in accordance with the manufacturer's installation instructions, and where of metal, ~~shall not be less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal~~ comply with Table 1503.2. The valley flashing shall extend at least 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) layer of underlayment of either one layer of Type I underlayment running the full length of the valley or a self-adhering polymer-modified bitumen sheet complying with ASTM D 1970, in addition to other required underlayment~~. In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing underlayment shall be solidly cemented to the roofing underlayment for slopes under seven units vertical in 12 units horizontal (58-percent slope) or self-adhering polymer-modified bitumen sheet shall be installed.~~

***Change Section 1507.10 to read as shown:***

**1507.10 Built-up roofs.** The installation of built-up roofs shall comply with the provisions of this section.

**1507.10.1 Slope.** Built-up roofs shall have a design slope of a minimum of one-fourth unit vertical in 12 units horizontal (2-percent slope) for drainage, except for coal-tar built-up roofs that shall have a design slope of a minimum one-eighth unit vertical in 12 units horizontal (1-percent slope).

**1507.10.2 Material standards.** Built-up roof covering materials shall comply with the standards in Table 1507.10.2 or UL 55A.

**1507.10.3 Red rosin paper.** Red rosin paper shall be used when the membrane is applied directly to a wood deck or cementitious fiber decks.

**TABLE 1507.10.2**

**BUILT-UP ROOFING MATERIAL STANDARDS**

|  |  |
| --- | --- |
| **MATERIAL STANDARD** | **STANDARD** |
| Acrylic coatings used in roofing | ASTM D 6083 |
| Aggregate surfacing | ASTM D 1863 |
| Asphalt adhesive used in roofing | ASTM D 3747 |
| Asphalt cements used in roofing | ASTM D 3019; D 2822;  D 4586 |
| Asphalt-coated glass fiber base sheet | ASTM D 4601 |
| Asphalt coatings used in roofing | ASTM D 1227; D 2823;  D 2824; D 4479 |
| Asphalt glass felt | ASTM D 2178 |
| Asphalt primer used in roofing | ASTM D 41 |
| Asphalt-saturated and asphalt-coated organic felt base sheet | ASTM D 2626 |
| Asphalt-saturated organic felt (perforated) | ASTM D 226 |
| Asphalt used in roofing | ASTM D 312 |
| Coal-tar cements used in roofing | ASTM D 4022; D 5643 |
| Coal-tar saturated organic felt | ASTM D 227 |
| Coal-tar pitch used in roofing | ASTM D 450; Type I or II |
| Coal-tar primer used in roofing, dampproofing and waterproofing | ASTM D 43 |
| Glass mat, coal tar | ASTM D 4990 |
| Glass mat, venting type | ASTM D 4897 |
| Mineral-surfaced inorganic cap sheet | ASTM D 3909 |
| Thermoplastic fabrics used in roofing | ASTM D 5665, D 5726 |

***Section 1507.17 Photovoltaic modules/shingles. Change to read as shown:***

**1507.17 Photovoltaic modules/shingles.** ~~The installation~~ Building integrated ~~P~~ photovoltaic roofing modules/shingles. The installation of building integrated ~~P~~ photovoltaic roofing modules/shingles shall comply with the provisions of this section.

**1507.17.1 Material standards.** Building integrated ~~P~~ photovoltaic roofing modules/shingles shall be listed and labeled in accordance with UL 1703.

**1507.17.2 Attachment.** Building integrated ~~P~~ photovoltaic roofing modules/shingles shall be attached in accordance with the manufacturer's installation instructions.

**1507.17.3 Wind resistance.** Building integrated ~~P~~ photovoltaic roofing modules/shingles shall be tested in accordance with procedures and acceptance criteria in ASTM D 3161 or TAS 107. Building integrated ~~P~~ photovoltaic roofing modules/shingles shall comply with the classification requirements of Table 1507.2.7.1~~(2)~~ for the appropriate maximum ~~nominal design~~ basic wind speed. Building integrated ~~P~~ photovoltaic roofing modules/shingle packaging shall bear a label to indicate compliance with the procedures in ASTM D 3161 or TAS 107 and the required classification from Table 1507.2.7.1~~(2)~~ .

***Section 1508.1 General. Change to read as shown:***

**1508.1 General.** The use of above-deck thermal insulation shall be permitted provided such insulation is covered with an approved roof covering and passes the tests of FM 4450, FM 4454 or UL 1256 (for wind uplift resistance), and ANSI/UL 263 or ASTM E119 (for fire resistance), when tested as an assembly. (No change to the remainder of text)

***Section 1508.2 Material standards. Change to read as shown:***

**1508.2 Material standards.** Above-deck thermal insulation board shall comply with the standards in Table 1508.2.

**TABLE 1508.2**

**MATERIAL STANDARDS FOR ROOF INSULATION**

|  |  |
| --- | --- |
| Cellular glass board | [ASTM C 552](javascript:vo();) |
| Composite boards | [ASTM C 1289](javascript:vo();), Type III, IV, V or VI |
| Expanded polystyrene | [ASTM C 578](javascript:vo();) |
| Extruded polystyrene board | [ASTM C 578](javascript:vo();) |
| Lightweight insulating concrete | ASTM C 495, C513, C796, C869 |
| Perlite board | [ASTM C 728](javascript:vo();) |
| Polyisocyanurate board | [ASTM C 1289](javascript:vo();), Type I or Type II |
| Wood fiberboard | [ASTM C 208](javascript:vo();) |

***Section 1509 Rooftop Structures. Add Sections 1509.6.4 and 1509.6.5 to read as shown:***

**1509.6.4 Equipment and appliances on roofs or elevated structures.** Where equipment and appliances requiring access are installed on roofs or elevated structures at a height exceeding 16 feet (4877 mm), such access shall be provided by a permanent approved means of access, the extent of which shall be from grade or floor level to the equipment and appliances' level service space. Such access shall not require climbing over obstructions greater than 30 inches (762 mm) high or walking on roofs having a slope greater than 4 units vertical in 12 units horizontal (33-percent slope).   
  
Permanent ladders installed to provide the required access shall comply with the following minimum design criteria:

1. The side railing shall extend above the parapet or roof edge not less than 30 inches (762 mm).

2. Ladders shall have rung spacing not to exceed 14 inches (356 mm) on center.

3. Ladders shall have a toe spacing not less than 6 inches (152 mm) deep.

4. There shall be a minimum of 18 inches (457 mm) between rails.

5. Rungs shall have a minimum 0.75-inch (19 mm) diameter and be capable of withstanding a 300-pound (136.1 kg) load.

6. Ladders over 30 feet (9144 mm) in height shall be provided with offset sections and landings capable of withstanding 100 pounds (488.2 kg/m2) per square foot.

7. Ladders shall be protected against corrosion by approved means. Catwalks installed to provide the required access shall be not less than 24 inches (610 mm) wide and shall have railings as required for service platforms. **Exception:** This section shall not apply to Group R-3 occupancies.

**1509.6.5 Mechanical units.** Roof mounted mechanical units shall be mounted on curbs raised a minimum of 8 inches (203 mm) above the roof surface, or where roofing materials extend beneath the unit, on raised equipment supports providing a minimum clearance height in accordance with Table 1509.6.5.

**Exception:** In buildings where the existing rooftop equipment, in the opinion of the building official, provides sufficient clearance to repair, recover, replace and/or maintain the roofing system or any of its components, such existing equipment need not comply with Table 1509.6.5

**TABLE 1509.6.5**

**CLEARANCE BELOW RAISED ROOF MOUNTED MECHANICAL UNITS**

|  |  |
| --- | --- |
| **WIDTH OF MECHANICAL UNIT**  **(inches)** | **MINIMUM CLEARANCE ABOVE**  **SURFACES (inches)** |
| < 24 | 14 |
| 24 < 36 | 18 |
| 36 < 48 | 24 |
| 48 < 60 | 30 |
| > 60 | 48 |
| For SI: 1 inch = 25.4 mm. |

**SECTION 1510**

**REROOFING**

***Section 1510 – Reroofing. Change Section 1510.3 to read as shown:***

**1510.3 Recovering versus replacement.** New roof coverings shall not be installed without first removing all existing layers of roof coverings down to the roof deck where any of the following conditions occur:

1. Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.

2. Where the existing roof covering is wood shake, slate, clay, cement or asbestos-cement tile.

3. Where the existing roof has two or more applications of any type of roof covering.

4. When blisters exist in any roofing, unless blisters are cut or scraped open and remaining materials secured down before applying additional roofing.

5. Where the existing roof is to be used for attachment for a new roof system and compliance with the securement provisions of Section 1504.1 cannot be met.   
  
**Exceptions:**

1. Complete and separate roofing systems, such as standing-seam metal roof systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings.

2.Reserved. ~~Metal panel, metal shingle and concrete and clay tile roof coverings shall be permitted to be installed over existing wood shake roofs when applied in accordance with Section 1510.4.~~

3. The application of a new protective coating over an existing spray polyurethane foam roofing system shall be permitted without tear-off of existing roof coverings.

4. Where the existing roof assembly includes an ice barrier membrane that is adhered to the roof deck, the existing ice barrier membrane shall be permitted to remain in place and covered with an additional layer of ice barrier membrane in accordance with Section 1507.

***Section 1512. Add a section to read as shown:***

**SECTION 1512**

**HIGH-VELOCITY HURRICANE ZONES-GENERAL**

**1512.1 Scope.** Sections 1512 through 1525 set forth minimum requirements for the installation of roofing components, roofing systems, roofing assemblies and the waterproofing thereof.

**1512.2 Application.** These high-velocity hurricane zone roofing requirements with associated roofing application standards (RAS) and testing application standards are solely to be implemented in areas of high basic wind speeds, and where the jurisdiction having authority has adopted their use.

**1512.2.1** All roofing components, roofing systems and roofing assemblies for construction regulated by this code shall comply with this chapter. All roofing components, roofing systems and roofing assemblies shall have a valid and current Product Approval. In the event that the manufacturers published literature or instructions are in conflict with those of the Product Approval, the Product Approval shall prevail. Where items specifically and expressly addressed in this chapter are in conflict with the Product Approval, the provisions of this chapter shall prevail.

**1512.2.2** Innovative products and/or systems outside those currently recognized under this chapter may have a product approval issued based on performance testing; in such case(s) the conditions set in the Product Approval shall prevail.

**1512.2.3** For roofing systems to be installed on a specific building or structure, where an existing Product Approval may not be applied, such roofing system may be granted a onetime approval by the authority having jurisdiction, provided the applicant demonstrates, by testing and/or rational analysis that such roofing system complies with the provision of this code.

**1512.2.4** Where a Product Approval does not address a detail for a specific job condition, the permit applicant may propose to the building official an alternate detail to address the specific need of the job. The building official may accept such proposal if it can be demonstrated that the provisions of this code will be met.

**1512.2.5 Workmanship standards**. All roofing work shall be performed by a qualified contractor licensed to perform roofing, in compliance with the tolerances, quality and methods of construction established herein or set forth in the standards adopted by these high-velocity hurricane zone requirements. Roofing assemblies detailed in the Product Approval shall be installed in strict compliance with the method of application set forth in such Product Approval or, if not part of the ~~p~~Product ~~a~~Approval, in compliance with manufacturer's published application instructions, or as approved by the building official. (Aesthetic issues not affecting the performance of the roof are not part of this chapter.)

**1512.2.5.1 Appearance.** If the architectural appearance is to be preserved from below, an alternate method of attachment complying with the windload requirements of Chapter 16 (High-Velocity Hurricane Zones) may be proposed unless otherwise addressed in Chapter 15. The alternative attachment shall be prepared, signed and sealed by a Florida-registered architect or a Florida-registered engineer, which architect or engineer shall be proficient in structural design.

**1512.3** Permits outside these high-velocity hurricane zone requirements shall comply with Section 105. Permits within high wind areas shall be required for all work in connection with the application, repair or maintenance of any roofing component or any roofing assembly and/or any of its components except as otherwise permitted in Section 105 of this code.

**1512.3.1** All new roofing construction, including recovering and reroofing, repair or maintenance shall have a uniform roofing permit application, as established by the authority having jurisdiction, completed and executed by a licensed contractor.

**1512.3.2** The uniform roofing permit shall include calculations per Chapter 16 (High-Velocity Hurricane Zone) of this code, unless the roofing assembly is less than the height/pressure threshold allowed in the applicable protocols herein.

**1512.3.3 Reserved.**

**1512.3.4** Attachments to the uniform roofing permit application shall include two copies of each of the following documents: properly executed OWNERS NOTIFICATION FOR ROOFING CONSIDERATIONS herein; the fire directory listing pages, Product Approval, and applicable detail drawings; the municipal permit application; other components approvals; and any other additional data reasonably required by the authority having jurisdiction needed to determine the integrity of the roofing system.

**1512.4 Inspections.**

**1512.4.1** All roofing work for which a permit is required shall be inspected by the building official. One or more inspections may be performed at the same time at the request of the roofing contractor or when feasible. Lack of roofing contractor's personnel at the job site, in and of itself, shall not be cause to fail the inspection. Certain roofing inspections shall be performed during specific phases of the applications as noted below:

**1512.4.2** For discontinuous roofing systems (as defined herein or Chapter 2):

**1512.4.2.1** During or after application of the base sheet, anchor sheet or underlayment of any roofing system.

**1512.4.2.2** During the installation of the cap sheet.

**1512.4.2.3** During the installation of any prepared roof covering, such as shingles, tiles, slates, shakes and similar.

**1512.4.2.4** Upon completion of all adhesive-set and mortar-set tile systems, and prior to the final inspection, a field verification and static uplift test, in compliance with TAS 106 shall be required to confirm tile adhesion to the underlayment. This test may be required by the building official for mechanically attached tile systems. All results of this test shall be submitted to the building official.

**1512.4.3** For continuous roofing systems (as defined in herein or Chapter 2):

**1512.4.3.1** During application of any roofing system prior to the full concealment of the adhesion/attachment process to the roof deck or to the existing roofing assembly.

**1512.4.3.2** In cases where a roof area is less than 1,500 square feet (139 m2), and when the building official is not able to perform any of the above requested inspection in a timely manner, the building official may authorize to continue with the work and may require that satisfactory evidence be provided to show that the covered work was performed in compliance with this code.

**1512.4.3.3** After all roofing work has been completed, a final inspection shall be performed by the building official.

***Section 1513. Add a section to read as shown:***

**SECTION 1513**

**HIGH-VELOCITY HURRICANE ZONES-DEFINITIONS**

**1513.1 Definitions.** For definitions outside Sections 1512 through 1525 and accompanied RAS and TAS, see Chapter 2. For the purposes of Sections 1512 through 1525, accompanying RAS, TAS and roofing Products Approval, roofing terms shall be defined in compliance with ASTM D 1079, unless otherwise defined below. The definitions listed below shall take preference. Other terms used herein shall be defined as set forth in Chapter 2 of this code.

**AIR PERMEABLE ROOFING SYSTEM**. A roofing system consisting of a prepared roof covering over an approved underlayment on a sloped roof. The components within the prepared roof covering are discontinuously laid and small, with unsealed side and head laps. Air permeable roofing systems shall be applied over sheathed decks with either mechanical attachment or a mortar/adhesive bond. Any roofing system with sealed side or head laps shall not be defined as an air permeable roofing system. The authority having jurisdiction may require testing in compliance with TAS 116, to determine whether a roofing system is air permeable.

**ANCHOR SHEET.** A roofing felt mechanically attached to a nailable deck with approved fasteners to which insulation is then installed in a solid mopping of asphalt. The roofing membrane is then installed to the insulation in the usual manner.

**ARCHITECTURAL METAL PANEL.** Water shedding (hydrokinetic) roof panel fastened to a roof deck.

**ASTM (ASTM International).** A scientific and technical organization that is responsible for the development of standards on characteristics and performance of materials, products, systems, as adopted for the high-velocity hurricane zone.

**NET FREE VENTILATING AREA (NFVA).** The gross area of the smallest plane area of the ventilating device reduced by the percentage of physical obstruction to the plane area.

**BASE SHEET.** The bottom or first ply of a roofing assembly over which subsequent roofing plies are applied. A base sheet may be designed for mechanical attachment, full or partial adhesion to the substrate.

**Building Integrated Photovoltaic Roofing.** A roofing product consisting of electricity generating photovoltaic component integrated into a roof covering.

**"CLASS A" ROOFING ASSEMBLY.** A roofing assembly that, in combination with the roof slope, has been classified by an approved testing agency, with a listing and follow-up service, as "Class A" in compliance with ASTM E 108 or UL 790.

**"CLASS B" ROOFING ASSEMBLY.** A roofing assembly that, in combination with the roof slope, has been classified by an approved testing agency, with a listing and follow-up service, as "Class B" in compliance with ASTM E 108 or UL 790.

**"CLASS C" ROOFING ASSEMBLY.** A roofing assembly that, in combination with the roof slope, has been classified by an approved testing agency, with a listing and follow-up service, as "Class C" in compliance with ASTM E 108 or UL 790.

**CONTINUOUS ROOFING SYSTEM.** An impervious roof covering, composed from a single or multiple layers, forming a homogenous membrane over the entire roof surface, applied to either a flat or pitched roof surfaces.

**CORROSION RESISTANT.** Any component that passes appendix of FMRC's Test Standard 4470, as modified, and set forth in TAS 114.

**COUNTER BATTENS.** Vertical wood strips installed on sloped roofs over which horizontal battens are secured. The primary roof covering is attached or secured to these horizontal battens.

**COUNTERFLASHING.** Formed metal or elastomeric sheeting secured on or into a wall, curb, pipe, roof-top unit or other surface to cover and protect the upper edge of a base flashing and its associated fasteners.

**DISCONTINUOUS ROOFING SYSTEM**. A roofing system with unsealed overlapping components, where the combined roofing system has openings at the point of overlap, applied to a sloped surface with a pitch of 2:12, or greater. Discontinuous roofing systems include asphalt shingles; concrete, clay or metal tile; wood shingles or shakes; and cement fiber roofing systems.

**DRY-IN.** The process of applying the first layer of felt in a roofing system.

**FMRC (Factory Mutual Research Corporation).** A research and testing organization that is responsible for examination and testing of construction and other products on behalf of member insurance companies.

**FASTENER WITHDRAWAL RESISTANCE TEST.** A static pullout test of mechanical fasteners, which are used to anchor any roofing component, to determine the force required to withdraw a fastener from the substrate. Testing shall be in compliance with the test procedure detailed in TAS 105.

**FIRE-RESISTANT ROOF COVERING.** Any Class A, Class B or Class C roofing system applied to the appropriate deck type within the specified slope of the listed classification.

**FLASHING**. The roofing component used to seal roofing systems, where the system is interrupted or terminated.

**LAP.** See NRCA Manual, 4th edition.

**METAL PROFILE.** Including but not limited to eave and gable drip, gravel stop, raised edge systems and fascia systems. All composite and nonmetallic flashing materials shall have a Product Approval.

**MINIMUM CHARACTERISTIC RESISTANCE FORCE.** A force or pressure which is representative of data from withdrawal resistance testing; static uplift testing; and/or wind uplift testing after the data has been statistically analyzed to a 95-percent level of precision.

**METAL ROOF PANEL.** An interlocking metal sheet having an installed weather exposure equal or greater than three square feet per sheet.

**METAL ROOF SHINGLE.** An interlocking metal sheet having an installed weather exposure less than 3 square feet (.3 m2) per sheet.

**MOMENT.** A quantity that represents the effect of a force applied at a particular point in relation to a specific point or axis.

**NRCA.** The NRCA Roofing and Waterproofing Manual , 5th edition, as published by the National Roofing Contractors Association.

**PREPARED ROOF COVERING.** Any manufactured or processed roof covering designed for use as the top layer of a discontinuous roofing system applied to a sloped roof.

**RAS.** Roofing Application Standards.

**RECOVERING.** The process of covering an existing roofing assembly with a new roofing system or a prepared roofing system.

**REPAIR.** The work of corrective procedures by replacing or altering an existing roofing component or system to eliminate water intrusion.

**REROOFING.** The process of recovering or replacing an existing roofing system, either in its entirety or in existing sections.

**RIDGE VENT.** A ventilator located within 18 inches (457 mm) of the ridge that allows the escape of warm and/or moist air from the attic area or rafter cavity.

**ROOFING ACCESSORY.** A type of roofing product as described in Section 1517.6 of this code.

**ROOFING ASSEMBLY.** An assembly of interacting roofing components [includes the roof deck, vapor retarder (if present), insulation, and roof covering].

**ROOFING COATINGS, ADHESIVES AND MASTICS.** Any and all liquid materials applied to the roofing membrane layer to enhance ultraviolet light resistance; increase resistance to fire; increase reflectivity of the roofing assembly; or, in some way, enhance the performance of the roofing assembly. Roofing coatings, adhesives or mastics shall not contain asbestos materials.

**ROOF COVERING.** An assembly of multiple field-applied components or a single component designed to weatherproof a building's top surface. A roof covering may be a roofing assembly or form a portion thereof.

**ROOFING COMPONENT.** A roofing product that is incorporated into various roofing assemblies.

**ROOF DECK.** Solid or spaced sheathing to which the roofing or waterproofing system is applied.

**ROOFING MAINTENANCE.** Is the work of extending the longevity of a roofing system through preventative care, such as refilling pitch pans, applying coatings, re**-**graveling, resurfacing and re-caulking.

**ROOF SECTION.** A separation or division of a roof area by existing expansion joints, parapet walls, flashing (excluding valleys), 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.

**ROOFING SYSTEM**. A system of interacting roofing components, generally consisting of membrane or primary roof covering and insulation (not including the roof deck) designed to weatherproof, and sometimes to improve, the building's thermal resistance.

**HIGH ROOF TILE PROFILE.** Those tiles having a rise-to-width ratio greater than 0.20.

**LOW ROOF TILE PROFILE.** Those tiles having a rise-to-width ratio less or equal than 0.20; except those tiles meeting the flat profile definition.

**FLAT ROOF TILE PROFILE.** Those tiles with less than 1/2-inch (12.7 mm) rise.

**STRUCTURAL METAL PANEL.** Roof covering intended to be self-supporting between structural members (see Sections 2003.8.2 and 2222.4).

**TAS. Testing Application Standard.**

**UNDERLAYMENT.** One or more water-shedding layers applied to a sloped roof prior to the application of a prepared roof covering. The primary purpose of an underlayment is defined as a water shedding layer to function in combination with a prepared roof covering.

**WOOD SHAKES.** Tapered or straight pieces of red cedar, or other wood types, of widths ranging from 3 inches to 14 inches (76 mm to 356 mm) ranging in lengths from 18 inches to 32 inches (457 mm to 813 mm) applied to a sloped roof, in conjunction with an approved underlayment, forming a discontinuous prepared roof system.

**WOOD SHINGLES.** Tapered pieces of red cedar, or other wood types, sawn on both faces, of widths ranging from 3 inches to 14 inches (356 mm) and lengths of 16 inches (406 mm), 18 inches (457 mm), and 24 inches (610 mm) applied to a sloped roof forming a discontinuous prepared roof system.

***Section 1514. Add a section to read as shown:***

**SECTION 1514**

**HIGH-VELOCITY HURRICANE ZONES-**

**WEATHER PROTECTION**

**1514.1 General.** Roof decks shall be covered with roof coverings secured to the building or structure in accordance with the provisions of this chapter. Roof coverings shall be designed, installed and maintained in accordance with this code and the manufacturer's installation instructions such that the roof covering shall serve to protect the building or structure. All roof coverings, roof systems and roof assemblies shall be designed and installed to resist the windload requirements of Chapter 16 (High-Velocity Hurricane Zones) of this code.

**1514.2 Flashings.** ~~Flashings shall be installed in such a manner as to prevent moisture entering the wall through the joints in the coping, through moisture permeable materials, at intersections with the roof plane or at parapet wall penetrations.~~ All roof flashing and terminations shall be designed and installed to resist the windload requirements of Chapter 16 (High-Velocity Hurricane Zone) of this code, and shall be in compliance with the provisions set forth in RAS 111.

**1514.2.1 Locations.** ~~Flashings shall be installed at (1) wall and roof intersections, (2) at gutters, (3) wherever there is a change in roof slope or direction, this requirement does not apply to the hip and ridge junctions, and (4) around roof openings.~~ Where flashing is of metal, the metal shall conform with the provisions of RAS 111.

**1514.2.2 Membrane flashings.** All membrane flashing shall be installed according to the roof assembly manufacturer's published literature and in accordance with the provisions set forth in RAS 111.

**1514.2.3 Metal flashings and terminations.** Metal flashing and terminations shall be of the material and thickness described in Section 1517.6 and RAS 111 of this code, and shall be designed and installed in accordance with RAS 111. ~~Metal flashing shall be installed after the roofing felts have been laid and turned up the vertical surfaces, in compliance with the roofing assembly Product Approval.~~

**1514.2.3.1** Such felts shall be embedded in hot bitumen or an approved adhesive.

**1514.2.3.2** Metal surfaces shall be primed with an ASTM D 41 or ASTM D 43 primer, as appropriate and allowed to dry prior to receiving hot bitumen or cold adhesive.

**1514.2.4 Metal counterflashing.** Metal counterflashing shall be of the material and thickness described in Section 1517.6 and RAS 111 of this code, and shall be installed in accordance with RAS 111.

**1514.2.4.1** Metal counterflashing shall be built into walls, set in reglets or applied as stucco type and shall be turned down over base flashing not less than 3 inches (76 mm).

**1514.2.4.2** Metal counterflashing shall be side lapped a minimum of 4 inches (102 mm).

**1514.2.4.3** Metal counterflashing, where set in reglets or surface-mounted, shall be waterproofed, in accordance with applicable application standards.

**1514.2.4.4** Where metal counterflashing is used as the means of sealing (such as a vented system) it shall be set in an approved sealant, sealed with an approved adhesive on the top flange and all joints shall be sealed with an approved sealant and lapped a minimum of 4 inches (102 mm).

**1514.2.5 Roof penetration flashing.**

**1514.2.5.1** All pipes shall be flashed with approved lead sleeve-type, pitch pans or other approved methods detailed in the roofing system assembly Product Approval. Lead flashing shall not be less than 2.5 pounds per square foot (12.2 kg/m2). Flanges shall be a minimum of 4 inches (102 mm).

**1514.2.5.2** Other roof penetrations shall be suitably flashed with curbs, collars, pitch pans, in compliance with RAS 111 or an approved method, in compliance with the roofing system assembly Product Approval.

**1514.2.5.3** No roof penetration shall be located in roof valleys.

**1514.3 Coping.** ~~Where required, parapet walls shall be properly coped with noncombustible, weatherproof materials of a width no less than the thickness of the parapet wall.~~ Copings shall be designed and installed to resist the windload requirements of Chapter 16 (High-Velocity Hurricane Zones) of this code, and shall be in accordance with the provisions set forth in RAS 111.

**1514.4 Roof drainage.** Unless roofs are sloped to drain over roof edges, roof drains shall be installed at each low point of the roof. Where required for roof drainage, scuppers shall be placed level with the roof surface in a wall or parapet. The scupper shall be located as determined by the roof slope and contributing roof area. Scuppers shall be sized in accordance with the provisions contained in ASCE 7, Section 8 with commentary and shall comply with Section 1611~~7~~ herein.

**1514.4.1 Gutters.** ~~Gutters and leaders placed on the outside of buildings, other than one- or two-family dwellings, private garages and buildings of Type II-B construction, shall be of noncombustible material or a minimum of Schedule 40 plastic pipe.~~ Gutters shall be in compliance with RAS 111.

**~~1514.4.1.1~~** ~~Gutters and leaders shall be constructed of metal or approved plastic for outdoor exposure with lapped, soldered or caulked joints and shall be securely fastened to the building with a corrosion resistant fastening device of similar or compatible material to the gutters and downspouts.~~

**1514.4.2 Overflow drains and scuppers.** Where roof drains are required, overflow drains or overflow scuppers sized in accordance with *Florida Building Code, Plumbing* shall be installed with the inlet flow line located not less than 2 inches (51 mm) or more than 4 inches (102 mm) above the low point of the finished roofing surface, excluding sumps. Overflow scuppers shall be a minimum of 4 inches (102 mm) in any dimension and shall be located as close as practical to required vertical leaders, conductors or downspouts. Overflow drains and scuppers shall also comply with the *Florida Building Code, Plumbing*, and Section 1611 of this code.

**1514.4.2.1** When overflow scuppers and roof drains are installed, they shall be lined with approved metal or other approved materials set forth in the roofing system assembly Product Approval.

**1514.4.2.2** When recovering, reroofing or repairing an existing roof, the existing number of scuppers and/or roof drains shall not be reduced, unless a new drainage system is designed by an architect or engineer, in compliance with the provisions of this code.

**1514.4.3 Sizing and discharge.** Roof drains, gutters, conductors and leaders shall be sized and discharge in accordance with the *Florida Building Code, Plumbing*.

***Section 1515. Add a section to read as shown:***

**SECTION 1515**

**HIGH-VELOCITY HURRICANE ZONES-**

**PERFORMANCE REQUIREMENTS**

**1515.1 General**. All roof assemblies, roof coverings and roof systems shall have Product Approval, and shall meet the following minimum requirements.

**1515.1.1** All continuous roofing assemblies shall be tested in compliance with FMRC Test Standards 4470 and/or 4471 (for metal roofing), as modified for the purposes of this code and set forth in TAS 114. Only those components listed within the roofing assembly Product Approval shall be approved for use with the roof covering. Roofing assemblies shall be acceptable for use in this code's jurisdiction providing they are in compliance with the fire classification required for the structure to which the roofing assembly is to be installed.

**1515.1.2** All fastening devices and fastening assemblies used for insulation, anchor sheet or roof coverings shall be tested in compliance with Section 1523 of this code.

**1515.1.3** All roofing assemblies shall be tested by a testing laboratory, certified by the certification agency in accordance with TAS 301, to confirm compliance with the fire classification and other sections of this code.

**1515.1.4** All roofing membranes and components shall be tested in compliance with the physical property test requirements detailed in TAS 110.

**1515.1.5** No loose laid ballasted or non-ballasted system shall be allowed.

**1515.2 Guidelines for roofing applications.**

**1515.2.1 Decks.** All roofing systems and prepared roof coverings shall be installed over solid decks, unless otherwise specifically allowed in other sections of this code.

**1515.2.2 Minimum slope.** All roofing assemblies must be installed in compliance with the slope requirements specified in the product control approval, in compliance with Table 1515.2.

**TABLE 1515.2**

**MINIMUM SLOPE**

|  |  |
| --- | --- |
| **SYSTEM TYPE** | **SLOPE** |
| Fibrous Cement Shingles | 4:12 |
| Metal Panels |  |
| Architectural | 2:12 |
| Metal Shingles | 4:12 |
| Mortar or Adhesive Tile | 2:12 |
| Mechanically Fastened Tile | 4:12 |
| Asphalt Shingles |  |
| Laminated | 2:12 |
| 3-Tab | 2:12 |
| Quarry Slate | 3-1/2:12 |
| Wood |  |
| Shakes | 4:12 |
| Shingles | 3-1/2:12 |

**1515.2.2.1** In new construction the minimum deck slope shall be not less than ¼:12.

~~All roofing systems must be installed to ensure positive drainage. In new construction the minimum deck slope shall be not less than 1/4:12.~~

**~~1515.2.2.2~~** ~~All roofing assemblies shall be installed at a slope no greater than the maximum allowed for the required fire classification~~

**1515.2.3** **Deck preparation**. ~~All roof decks, substrates, existing roofing systems to which a new roofing assembly is to be installed shall be broom cleaned, free from dirt and silt and dry prior to commencement of the roofing application.~~

**1515.2.3.1****Reserved.** ~~Cant strips, if required, shall be extended not less than 3-inch (76 mm) up vertical flashing surfaces, measured from the top of the new roof covering.~~

**1515.2.3.2** All eaves shall provide a firm nailable substrate for secure attachment of perimeter edge metal in compliance with RAS 111.

**1515.2.3.3** Perimeter edge metal shall be fastened with nails or fasteners fabricated from similar or compatible material. The nails or fasteners shall be as set forth in the roofing assembly Product Approval.

**~~1515.2.3.4~~** ~~All precast and prestressed concrete deck components shall be leveled with leveling fill, where such components' edges are greater than 1/2 inch (12.7 mm) from being flush.~~

**1515.2.4 Impact resistance.** Roof coverings installed on low slope roofs in accordance with Section 1519 shall resist impact damage based on the results of test conducted in accordance with ASTM D 3746, ASTM D 4272, CGSB 37, FM 4470 or TAS 114.

**1515.2.5 Ridge vents**. Ridge vents shall have a Product Approval, and shall be tested for wind driven rain in accordance with TAS 110 and Section 1523.

***Section 1516. Add a section to read as shown:***

**SECTION 1516**

**HIGH-VELOCITY HURRICANE ZONES-**

**FIRE CLASSIFICATION**

**1516.1 General.** Roof assemblies shall be divided into the classes defined below. Class A, B and C roof assemblies and roof coverings required to be listed by this section shall be tested in accordance with ASTM E 108 or UL 790. In addition, fire retardant treated wood roof coverings shall be tested in accordance with ASTM D 2898.

**1516.2** Fire resistant roofing assemblies and coverings shall be provided on all structures. Fire classification of roofing assemblies and coverings shall be based on the exposure hazard as follows:

**1516.2.1 Class A.** Zero feet to 20 feet (0 to 6.1 m) distance separation measured horizontally from the closest point of any building edge to the nearest point to an adjoining structure, and all buildings with occupation greater than 300 persons.

**Exception:** Brick, masonry, slate, clay or concrete roof tile and exposed concrete roof deck are considered to meet Class A roof covering provisions without testing.

**1516.2.2 Class B.** All other structures, except as noted below

**1516.2.3 Class C.** Structures not occupied by humans.

**1516.2.4** All roofing assemblies shall be installed at a slope no greater than the maximum allowed for the required fire classification.

**1516.2.5** Waterproofing assembly must possess a Class A, Class B or Class C fire rating as required herein.

***Section 1517. Add a section to read as shown:***

**SECTION 1517**

**HIGH-VELOCITY HURRICANE ZONES-**

**MATERIALS**

**1517.1 Scope.** Every roofing component shall comply with the applicable ASTM material standards adopted by this code. All such products shall bear the testing logo imprinted on the material and/or container or shall be marked in a distinctive manner to define compliance with the standards and shall be subject to be evaluated for compliance. The certification agency shall carry out random testing of labeled products to confirm compliance with ASTM material standard.

**1517.2 Compatibility of materials.** **Reserved.** ~~Roofs and roof coverings shall be of materials that are compatible with each other and with the building or structure to which the materials are applied.~~

**1517.3 Material specification and physical characteristics.** **Reserved.** ~~No roofing component containing asbestos shall be used in any roofing assembly.~~

**1517.4 Product identification.** All roofing components shall be labeled and/or identified as mandated by the Product Approval.

**1517.4.1** ASTM standard roll goods shall be marked with a yellow line to identify the ASTM standard, or such other marking as may be deemed appropriate by the Product Approval.

**1517.5 Fasteners.**

**1517.5.1** Nails shall be minimum 12 gage, annular ring shank nails having not less than 20 rings per inch, heads not less than 3/8 inch (9.5 mm) in diameter; and lengths sufficient to penetrate through the thickness of plywood panel or wood plank decking not less than 3/16 inch (4.8 mm), or to penetrate into a 1 inch (25 mm) or greater thickness of lumber not less than 1 inch. Nails or wood screws shall be hot dipped electro or mechanically galvanized to a thickness sufficient to resist corrosion in compliance with TAS 114, Appendix E, Section 2 (ASTM G 85). All nails shall be listed by a certification agency. All nail cartons or carton labels shall be labeled to note compliance with the corrosion resistance requirements. No roofing material shall be fully or partially adhered directly to a nailable deck, unless otherwise noted in the roof assembly Product Approval.

**1517.5.2** Such fasteners shall be applied through "Tin caps" no less than 1-5/8 inches (41 mm) and not more than 2 inches (51 mm) in diameter and of not less than 32 gage (0.010 inch) sheet metal. "Cap nails" or prefabricated fasteners with integral heads complying with this section shall be an acceptable substitute. All "tin caps," "cap nails" or prefabricated fasteners with integral heads shall be tested for corrosion resistance in compliance with TAS 114 Appendix E, Section 2 (ASTM G 85), and shall be product control listed. All of cartons or carton labels "tin caps," "cap nails" or prefabricated fasteners with integral heads shall be labeled to note compliance with the corrosion resistance requirements.

**1517.6 Metal roofing accessories**. All metal accessories for roofs shall be not less than 26 gage G-90 galvanized or stainless steel, 16 ounce copper, 0.025-inch (0.6 mm) thick aluminum, lead sheet with a minimum 2.5 lb/sf (12.2 kg/m2) or equivalent noncorrosive metal alloys or composite materials manufactured for use as roof termination. All composite and nonmetallic flashing materials shall have a Product Approval.

**1517.6.1** Metal accessories may be of a manufactured, shop-fabricated or field-fabricated type, providing the materials and fasteners are in compliance with the minimum requirements of this code and shall be sized, designed and installed in compliance with methods set forth in RAS 111.

**1517.6.2** Gravel stop or drip edge profiles shall be as follows:

**1517.6.2.1** The vertical face shall be a minimum of 1 ½ inches (38 mm) and shall extend down not less than 1/2 inch (12.7 mm) below the sheathing or other member immediately contiguous thereto. In all cases, the deck flange shall be not less than 2 inches (51 mm) in width. Gravel stop or drip edge shall be sized, designed and installed in compliance with RAS 111.

**1517.6.2.2** Gravel stop or drip edge shall be designed so that the bottom (the kick of the metal) of the drip edge shall have a minimum of 1/2-inch (12.7 mm) clearance from the structure.

**1517.6.2.3** Reserved.

**1517.6.2.4** Gravel stops shall be installed after all roofing felts have been applied, or in compliance with the application method set forth in the roofing assembly Product Approval. All asphalt or approved cold adhesive bonding areas shall be coated with ASTM D 41 or ASTM D 43, as required, and allowed to dry prior to application.

**1517.6.2.5** Gravel stops and drip edges shall be joined by lapping a minimum of 4 inches (102 mm) and the entire interior of the joints shall be coated with approved flashing cement. Cover and splice plates shall be of the same material as the gravel stop and drip edge, and shall be sized, fabricated and installed in compliance with RAS 111.

**1517.6.2.6** The deck flange shall be nailed with an approved minimum 12 gage annular ring shank nail at 4 inches (102 mm) o.c. The nail shall be manufactured from similar and/or compatible material to the termination profile. All composite materials shall be fastened with nonferrous nails.

**~~1517.6.3 Valley metal.~~** ~~Valley metal shall be of the materials set forth in Section 1517.6.~~

***Section 1518. Add a section to read as shown:***

**SECTION 1518**

**HIGH-VELOCITY HURRICANE ZONES-**

**ROOF COVERINGS WITH SLOPES 2:12 OR GREATER**

**1518.1 General.** Prepared roof coverings shall be as defined in Section 1513 and in general limited to application over sloped roof decks capable of receiving mechanical fasteners. Prepared roof coverings may be mechanically fastened or, in specific limited cases noted in the Product Approval, set in an adhesive bond.

**1518.2 Underlayments.** Underlayment shall be as defined in Section 1513. Underlayment shall be installed in compliance with the roofing component Product Approval and shall be in compliance with the following minimum requirements:

**1518.2.1** Underlayment shall be attached to a nailable deck in a grid pattern of 12 inches (305 mm) between the overlaps, with 6-inch (152 mm) spacing at the overlaps.

**1518.2.2** Where the architectural appearance of the underside is to be preserved, the underlayment shall be secured in accordance with Section 1519.5.2.

**1518.2.3** Tin caps and nails or cap nails shall be as defined in Section 1517.5.2.

**1518.2.4** Underlayment nails shall be as defined in Section 1517.5.1.

**1518.3** If the underlayment is a self-adhering membrane, the membrane shall be applied over a mechanically attached anchor sheet, attached in compliance with Section 1518.2.1.

**1518.4** All underlayment applications for prepared roof coverings shall be applied in compliance with the manufacturer roofing assembly Product Approval, and shall be not less than one of the following: (1) A double layer of an ASTM D 226 Type I, with a 19-inch (483 mm) headlap; or (2) A single layer of an ASTM D 226, type II with a 4-inch (102 mm) headlap; or (3) A single layer of an ASTM D 2626 coated base sheet with a 4 inch (102 mm) headlap, and (4) All endlaps shall be a minimum of 6 inches (152 mm).

**1518.5 Fiber cement shingles.** Fiber-cement shingles shall be applied in compliance with the shingle manufacturer's roofing assembly Product Approval. The roofing system assembly Product Approval shall meet the following minimum requirements:

**1518.5.1** All non**-**asbestos fiber-cement shingles shall conform to ASTM C 1225.

**1518.5.2** Fiber-cement shingles shall be installed in compliance with the nailing requirements set forth in the Product Approval; however, attachment of each component shall be with not less than two corrosion resistant fasteners. If adhesive is used at the head or side laps, the system shall be defined as a "sealed system" with load calculations in compliance with Chapter 16 (High-Velocity Hurricane Zones).

**1518.5.3** All intersections shall be flashed in metal as provided in Section 1517.6 and RAS 111.

**1518.5.4** Fiber-cement shingles shall be tested as set forth in Section 1523.

**1518.6 Quarry slate.** Quarry slates shall be applied in compliance with the slate manufacturer's Product Approval. The roofing assembly Product Approval shall meet the following minimum requirements:

**1518.6.1** Quarry slates shall be installed with not less than two approved fasteners per slate.

**1518.6.2** All terminations and intersections shall be flashed in metal as provided in Section 1517.6 and RAS 111.

**1518.6.3** Quarry slates shall be tested in compliance with the requirements set forth in Section 1523.

**1518.6.4** Installation of all quarry roof slates shall be limited to a roof mean height of 33 feet (10 m), unless otherwise specifically noted in the Product Approval.

**1518.7 Asphaltic shingles.** Asphaltic shingles layout, alignment and placement of mechanical attachment shall be in compliance with the Product Approval, and shall be installed in accordance with RAS 115.

**1518.7.1** Underlayments exceeding minimum underlayments, as detailed in Section 1518, shall be applied in compliance with the application methods detailed in the Product Approval. Where the architectural appearance of the underside of the roof is to be preserved, refer to Section 1519.5.2.

**1518.7.2** Installation of all asphaltic shingles shall be limited to a roof mean height of 33 feet (10 m), unless otherwise specifically noted in the Product Approval.

**1518.7.3** The asphaltic shingle Product Approval shall meet the following minimum requirements.

**1518.7.3.1** Where asphaltic shingles are to be installed over insulated roof deck, a suitable nailable substrate, in accordance with Section 1520.5.7 must be installed over the insulation prior to the installation of approved underlayment and shingles.

**1518.7.3.2** Asphaltic shingles shall be installed in compliance with the Product Approval, but in no case with less than six approved roofing nails or approved fastening devices which penetrate through the thickness of sheathing or wood plank a minimum of 3/16 inch (4.8 mm) or penetrate into a 1 inch (25 mm) or greater thickness of lumber a minimum of 1 inch (25 mm), except where architectural appearance is to be preserved, in which case a minimum of ¾ inch (19 mm) ring shank roofing nail may be used.

**1518.7.3.3** Intersections, eaves, rakes, valleys, gable ends, and the starter course of asphaltic shingles shall be set in an 8-inch (203 mm) wide bed of approved cold adhesive or roofing cement. Application of adhesive or cement shall be in compliance with the application instructions of the Product Approval. Shingles shall not extend more than ¼ inch (6.4 mm) beyond the eave drip.

**1518.7.3.4** All perimeter termination and valleys shall be fabricated from metal. Minimum metal requirements are set forth in Section 1517.6 and RAS 111.

**1518.7.3.5** Asphaltic shingles shall be tested in compliance with the provisions set forth in Section 1523.

**1518.8 Clay and concrete roof tile.** Tile shall be clay, concrete or composition material of various configurations complying with the physical property requirements of this code. All tile and tile systems shall be tested in compliance with the provisions set forth in Section 1523. Tile shall have a product approval for a complete tile system, which shall include the tile, underlayment and all tile related accessories required to provide a waterproof system.

**1518.8.1 Application.** All tile systems shall be installed over solid sheathed decks. All tile installation shall be in accordance with RAS 118, RAS 119, and RAS 120, as applicable.

**1518.8.1.1** Roof tile mortar shall either be a pre-mixed unit having a Product Approval and tested in compliance with TAS 123 or a job-site mix approved by the building official and in compliance with RAS 113.

**1518.8.2** The roof tile Product Approval shall specify the slope requirement for each tile and underlayment system in accordance with Table 1515.2.

**1518.8.3** All roof tile fasteners shall be tested and comply with the requirements set forth in Section 1523.

**1518.8.4 All tile systems.** All tile application designs shall comply with the following limitations in order to withstand the wind loads prescribed in this section, as well as all wind load requirements set forth in Chapter 16 (High-Velocity Hurricane Zones).

**1518.8.4.1** Roof tile systems, combining mechanically fastened tile and mortar and/or adhesive, shall be acceptable.

**1518.8.4.2** In an air permeable tile roofing systems: (1) the length of each tile shall be not less than 12 inches (305 mm) and not greater than 21 inches (533 mm) and the exposed width of the tile shall be between 8.5 inches and 15 inches (216 and 381 mm); (2) the maximum thickness of the nose (leading edge) of the tile shall not exceed 1.3 inches (33 mm); and (3) mortar or adhesive set system shall have at least two-thirds of the tile free of mortar and/or adhesive contact.

**1518.8.5** The proposed method of attachment for tile systems which are considered to be air permeable, shall provide sufficient attachment resistance (Mf) (listed in tile product approval) to meet or exceed the moment of resistance (Mr) as determined by following the procedures outlined in RAS 127. The aerodynamic multiplier (k) needed in RAS 127 shall be part of the tile Product Approval and shall be derived from the following formula:

**for direct deck application k = (0.156) × (b) × (l)2**

**for batten application k = (0.144) × (b) × (l)2**

Where b (in feet) = exposed width of the tiles

Where l (in feet) = length of tiles

**1518.8.6** The proposed method of attachment for tile systems which are not considered air permeable shall provide a minimum characteristic force (F') (listed in tile product control approval) to meet or exceed the required uplift resistance (Fr) as determined by following the procedures outlined in RAS 127.

**1518.8.7** Tile systems shall extend beyond the drip edge (not including the rake) not less than 3/4 inch (19 mm) but not more than 2 inches (51 mm).

**1518.8.8** **Reserved.** ~~Spanish "S" tile, barrel tile or other tile systems that create a void between the deck and the underside of the tile shall be closed at the eaves with a prefabricated closure or mortar filler to close the eaves and elevate the butt ends of the first course, as detailed in the tile system Product Approval~~

**1518.8.9** **Reserved.** ~~Apply a minimum 3/8-inch (9.5 mm) diameter weephole, spaced not more than 12 inches (305 mm) apart, located flush with the underlayment of all tile systems, except tile systems using thick-butt tile~~

**1518.8.10** Mortar or adhesive set tiles applied at an incline from 6:12 up to and including 7:12 shall have the first course of tile (this applies to pan only on two-piece barrel tile) mechanically fastened with not less than one fastener per tile. As an alternate, the first course of tile shall be applied in mortar over a single layer of minimum 20 gage galvanized wire mesh with openings of not less than 1/2 inch (12.7 mm) or greater than 11/2 inches (38 mm) with minimum exposure of 12 inches (305 mm) which is mechanically attached to the deck through the underlayment with approved fasteners and tin-cap when back**-**nailing the cap sheet. Additionally, for roof inclines of 6:12 up to and including 7:12, every third tile of every fifth course, shall be mechanically fastened with not less than one fastener per tile. For roof inclines above 7:12, in addition to the mortar or adhesive, all tiles shall be mechanically fastened with not less than one fastener per tile. Apply approved flashing cement to seal all tile fastener penetrations, for all roof inclines.

**1518.8.11** All tile systems shall be shingle lapped interlocking and installed with the headlap as specified in the tile system Product Approval. In no case shall the minimum headlap be less than 2 inches (51 mm) for mortar or adhesive set tile, or less than 3 inches (76 mm) for mechanically set tile, unless restricted by product design.

**1518.8.12** Where tiles are to be installed over an insulated roof deck, a suitable nailable substrate, in accordance with Sections 1520.5.6 and 1520.5.7 must be installed over the insulation prior to the installation of approved underlayment and tiles.

**1518.8.13** For mortar or adhesive set tile, no more than two tiles shall be loose per roofing square [100 square feet (9.3 m2)]. No loose tile shall be adjacent to each other.

**1518.9 Metal panels/shingles.** Steel panels/shingles shall be a minimum of G-90 corrosion resistant, and shall be not less than 26 gage in thickness. Aluminum panels/shingles shall not be less than 0.025-inch (0.685 mm) thick. All other metal panel/shingle products shall be an equivalent weight. All metal panel/shingle assemblies shall be capable of withstanding foot traffic without damage to the metal panels/shingles. Metal panels/shingles shall have Product Approval for a complete metal system, which shall include the panel/shingle, underlayment and all related accessories to provide a complete waterproof system.

**1518.9.1** All metal panels/shingles assemblies shall be tested in accordance with Section 1523, and TAS 125.

**1518.9.2** The entire application method of all metal panel/shingle systems shall be detailed in the Product Approval and RAS 133, as applicable.

**1518.9.3** Metal shingles may be applied as a recover over a single layer of asphaltic shingles or smooth surface roofing, providing the deck is solid sheathed and in compliance with the provisions of this code, the existing prepared roof covering is in compliance with provisions of this code and the entire metal shingle system is applied as set forth in the Product Approval.

**1518.9.4** Metal panel/shingle systems shall not extend more than 1 inch (25 mm) beyond the roof eave.

**1518.9.5** All intersections shall be flashed in metal as provided in Section 1517.6, RAS 111 and the roof assembly Product Approval.

**1518.10 Wood shingles and shakes.** All wood shingles and shakes shall be installed in accordance with RAS 130. Installation of all wood shingles and shakes shall be limited to a roof mean height of 33 feet (10 m), unless otherwise specifically noted in the Product Approval.

**1518.10.1** All wood shingle/shake systems shall be tested in accordance with Section 1523.

**1518.11 Building integrated photovoltaic roofing modules/shingles.** The installation of building integrated photovoltaic roofing modules/shingles shall comply with the provisions of this section.

**1518.11.1 Material standards.** Building integrated photovoltaic roofing modules/shingles shall be listed and labeled in accordance with UL 1703.

**1518.11.2 Attachment.** Building integrated photovoltaic roofing modules/shingles shall be attached in accordance with the manufacturer’s product approval.

**1518.11.3 Wind resistance.** Building integrated photovoltaic roofing modules/shingles shall be tested in accordance with procedures and acceptance criteria in TAS 107. Building integrated photovoltaic roofing modules/shingle packaging shall bear a label to indicate compliance with the procedures in TAS 107.

***Section 1519. Add a section to read as follows:***

**SECTION 1519**

**HIGH-VELOCITY HURRICANE ZONES-**

**ROOF COVERINGS WITH SLOPES LESS THAN 2:12**

**1519.1 General.** All adhered roofing components shall be bonded to the various types of substrates in compliance with the requirements set forth in the roofing assembly Product Approval and the following minimum requirements. The authority having jurisdiction may adopt RAS 150 as the means of complying with the requirements listed in this section.

**1519.2** All packaged asphalt shall have the following data printed on the carton wrapper:

**1519.2.1** ASTM designation and type;

**1519.2.2** Flash point as determined by ASTM D 92, Flash and Fire Point by Cleveland Open Cup; and

**1519.2.3** Equiviscous temperature (EVT) at which the asphalt attains a viscosity of 125 centipoise (25 centipoise for coal tar) as determined by ASTM D 4402, Viscosity Determinations of Unfilled Asphalt Using The Brookfield Thermoset Apparatus.

**1519.3** Asphalt types, as defined by ASTM D 312, shall be employed in all roofing assemblies. Application of asphalt shall be in compliance with Table 1519.3A and Table 1519.3B or as detailed in the roofing assembly Product Approval.

**1519.4** Back nailing of interply sheets shall not be required when using ASTM D 312 Type IV asphalt on slopes less than 3:12.

**TABLE 1519.3A**

**SLOPE AND APPLICATION TEMPERATURE CRITERIA**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **MAXIMUM1** | | | | |
|  | | **Slope**  **(in./ft)** | **Temperature**  **(°F)** | |
| **ASTM D312**  **TYPES OF ASPHALT** |  |  | **MOP** | **MECHANICAL** |
| Type I | Dead Level | 1/4 | 350 ± 25 | 375 ± 25 |
| Type II | Flat | 1/2 | 400 ± 25 | 425 ± 25 |
| Type III | Steep | 3 | 425 ± 25 | 450 ±  25 |
| Type IV | Special Steep (All roof tile systems) | N/A | 450 ±  25 | 475 ± 25 |
| 1 inch = 25.4 mm; °C = 5/9 (°F - 32). | | | | |
| 1. Temperature and slope measurements are at point of application. | | | | |

**TABLE 1519.3B**

**SLOPE AND APPLICATION TEMPERATURE CRITERIA**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ASTM 450**  **COAL TAR  TYPE NO.** | **TYPE OF  COAL TAR** | **MAXIMUM**  **SLOPE**  **(in./ft)** | | **TEMPERATURE**  **RANGE**  **(°F)** |
| Type I | Coal Tar Pitch | 1/4 | | 360 ± 25 |
| Type II | Coal Tar Bitumen | 1/4 | | 375 ± 25 |
| 1 inch = 25.4 mm; °C = 5/9 (°F - 32). | | |

**1519.5 Mechanical attachment.** All mechanically attached roofing components shall be attached to the various types of substrates in compliance with the requirements set forth in the roofing assembly Product Approval and the following minimum requirements.

**1519.5.1 Base sheet attachment on wood decks.** Nails shall be minimum 12 gage, annular ring shank nails having not less than 20 rings per inch; heads not less than 3/8 inch (9.5 mm) in diameter; and lengths sufficient to penetrate through the thickness of plywood panel or wood plank decking not less than 3/16 inch (5 mm), or to penetrate into a 1-inch (25.4 mm), or greater, thickness of lumber not less than 1 inch (25.4 mm). Nails shall be hot dipped; electro or mechanically galvanized to a thickness sufficient to resist corrosion in compliance with Appendix E of TAS 114. All nails shall have Product Approval. All nail cartons or carton labels shall be labeled to note compliance with the corrosion resistance requirements. No roofing material shall be fully or partially adhered, unless otherwise noted in the roof assembly Product Approval directly to a nailable deck.

**1519.5.1.1** Tin caps shall meet the requirements of Section 1517.5.2.

**1519.5.1.2** Prefabricated fastener systems complying with Section 1519.5.1 and Section 1519.5.1.1 may be used, provided they are Product Approved.

**1519.5.1.3** Spacing of such fasteners shall be in compliance with patterns set forth in the roofing assembly Product Approval.

**1519.5.2** Where the architectural appearance of the underside is to be preserved, a base sheet may be secured in an alternate method of attachment prepared, signed, and sealed by a Florida-registered architect or engineer, or in buildings where the mean roof height does not exceed 15 feet (4.6 m), a base sheet may be secured with 11/4-inch (32 mm) fasteners on supporting members, with a minimum of ½-inch (12.7 mm) fasteners between the supporting members, all of which shall be secured through tin caps and nailed 6 inches (152 mm) o.c. in all directions.

**1519.5.3 Lightweight insulating concrete**. All lightweight insulating ~~insulated~~ concrete shall be vented per roofing system manufacturer recommendations.

**1519.5.3.1** Lightweight concrete shall not be applied over an existing roof deck unless the supporting structure has been approved as adequate to sustain the added weight. Calculations verifying the adequacy of the existing structure to sustain the added weight shall be prepared, signed, sealed and dated by a Florida-registered architect or engineer, who is proficient in structural design, and submitted with the uniform roofing permit application.

**1519.5.4 Other nailable decks**. The mechanical attachment of roofing components to other nailable decks shall be governed by the roofing assembly Product Approval.

**1519.6 Cast-in-place and precast structural concrete decks.** Cast-in-place and precast structural concrete decks are considered non-nailable. Concrete decks shall be clean, dry and fully primed with ASTM D 41 or ASTM D 43, as required, primer applied at a rate of not less than 1 gallon (3.8 L) per square. Hot asphalt or cold adhesive shall not be applied until the primer has fully dried.

**~~1519.6.1~~** ~~In hot mopped applications over precast panels, a minimum of 12-inch (305 mm) wide strips of roofing felt or modified bitumen shall be applied to all panel joints. Said strips shall be bonded to the panel joints with asphalt, approved mastic or approved cold applied adhesive or shall be torched to a primed surface.~~ Researved.

**1519.7 Steel decks.** Steel decks shall be covered with a roof insulation panel having its own Product Approval and listed in the roofing assembly product approval. Insulation panels shall be mechanically fastened in compliance with the mechanical attachment patterns listed in the roofing assembly Product Approval and in accordance with the provisions of RAS 117.

**1519.7.1** If the deck thickness on an existing steel deck is less than 22 gage, a field fastener withdrawal resistance test shall be conducted in compliance with TAS 105, to confirm compliance with the wind load requirements of Chapter 16 (High-Velocity Hurricane Zones). Test results shall be submitted with the uniform roofing permit application for review prior to issuance of the roofing permit. The field fastener withdrawal resistance test shall be carried out by an approved testing laboratory.

**1519.7.2** Steel decks shall be welded or mechanically attached to the structure in compliance with the design pressure requirements set forth in Chapter 16 (High-Velocity Hurricane Zones).

**1519.7.3** Composite wood and insulation panels shall be mechanically attached to steel decks in compliance with the attachment requirements enumerated in the insulation roofing component Product Approval. The composite wood insulation panel shall be in compliance with the minimum sheathing requirements of this code.

**1519.8 Flashing.** All flashing shall be installed according to the roof assembly manufacturer's published details and literature and in accordance with RAS 111.

**1519.9 Valleys.** Valleys in BUR shall be installed according to the roof assembly manufacturer's published literature for high wind areas and in compliance with the applicable detail described in the Product Approval.

**1519.10 Parapet walls**. All parapet wall details shall be installed in accordance with the roofing system product approval, manufacturer's published details and literature and in accordance with approved methods detailed in RAS 111.

**1519.11 Insulation.** Roof insulation shall be applied in compliance with the roofing system Product Approval and RAS 117.

**1519.12 Surfacing.** Roofing assemblies shall be surfaced in compliance with the Product Approval. Surfacing shall be in sufficient quantity to comply with the required fire classification. Aggregate surfacing shall not be used on slopes greater than 3:12. Aggregate shall be embedded in a flood coat of bitumen applied over a prepared top ply.

**1519.12.1** On slopes of 3:12 or less, not less than 400 pound (182 kg) of roofing gravel or 300 pounds (145 kg) of slag per square shall be applied. A minimum of 50 percent of the total aggregate shall be embedded in the flood coat of bitumen. Aggregate shall be dry and free from dirt and shall be in compliance with the sizing requirements set forth in ASTM D 1863. A building official may request a test to confirm compliance with these requirements.

**1519.12.2** On inclines greater than 3:12, a smooth surface coating shall be applied.

**1519.12.3** Mineral surfaced cap sheet applications shall not require any additional surfacing unless required with the particular assembly for a fire classification.

**1519.12.4** All smooth surface applications shall be coated with an aluminized or emulsion coating, having a valid and current Product Approval and shall be in compliance with the application instructions in said Product Approval. Coating quantity shall be in compliance with the required fire rating classification for the structure.

**1519.13 Attachment of metal termination.** All edge metal and terminations shall be installed according to manufacturer's published literature, provided it meets the minimum requirements as set for in RAS 111 and Chapter 16 (High-Velocity Hurricane Zones).

**1519.14 Expansion joints.** Expansion joint covers and expansion joint components shall be constructed and installed in accordance with the roofing assembly manufacturer's published literature.

**1519.15 Venting roofing assemblies.** All roof assemblies shall be applied to a dry substrate. Vapor retarders shall be installed, where applicable, to reduce moisture vapor flow into insulation from the warm, humid building interior, leading to internal condensation. Vents shall be installed to assist in the expulsion of moisture vapor where such vapor may enter the roofing assembly or moisture, as defined in Section 1521.12. Venting units shall not allow vapor to enter the roofing assembly when the high vapor pressure side is above the roofing membrane.

**1519.16 Waterproofing.** Waterproofing systems may be installed in lieu of an approved roof system over sloped or horizontal decks specifically designed for pedestrian and/or vehicular traffic, whether the deck is above occupied or unoccupied space. In new construction the minimum deck slope shall be ¼:12.

**1519.16.1** The waterproofing system must possess a current and valid product approval.

**1519.16.2** If an overburden or wearing surface is not to be installed, the waterproofing system must be approved by the manufacturer for use in vehicular and/or pedestrian traffic locations.

**1519.16.3** **Reserved.** ~~The waterproofing assembly must possess a Class A, Class B or Class C fire rating as required herein.~~

**1519.16.4** If any portion of the waterproofing membrane is to remain exposed, the waterproofing system shall be ultra-violet resistant.

**1519.16.5** Flashings must be installed in accordance with the waterproofing manufacturer's published specifications and in compliance with the material and attachment standards of RAS 111.

**1519.16.6** The waterproofing system shall be flood tested in accordance with ASTM D 5957.

**1519.16.6.1** The flood test shall take place after installation of the waterproofing membrane and prior to the installation of any above membrane components, wearing surface or overburden.

**1519.16.6.2** An approved testing lab shall provide written verification to the building official confirming that the flood test was performed along with the results, prior to final inspection.

***Section 1520. Add a section to read as shown:***

**SECTION 1520**

**HIGH-VELOCITY HURRICANE ZONES-**

**ROOF INSULATION**

**1520.1 General.** All roof insulation shall have a product approval as an approved roofing component for use in roofing assemblies. All insulation shall be tested for physical properties in accordance with TAS 110.

**1520.2 Foam plastic.** ~~Foam plastic roof insulation shall conform to the material and insulation requirements of Chapter 26.~~ Reserved.

**1520.2.1** Foam insulation panels shall be overlaid with a perlite, fiberglass, wood fiber or mineral wool overlay unless specifically stated to the contrary in the roof assembly Product Approval.

**1520.3 Cellulose fiberboard.** **Reserved.** ~~Cellulosic fiberboard roof insulation requirements shall conform to the materials and insulation requirements of Chapter 23~~

**1520.4 Insulation fasteners, membrane fasteners and stress plates.** All insulation fasteners, membrane fasteners and stress plates shall have a roof component Product Approval, and shall be tested in compliance with RAS 117 Appendixes A, B and C, and TAS 110 and TAS 114, Appendix E, Section 3 (DIN 50018), for corrosion resistance.

**1520.5 Application.** Roof insulation shall be applied in strict compliance with the application methods detailed in the roof assembly Product Approval and with the requirements set forth in RAS 117.

**1520.5.1** Roof insulation, either on the ground or on the roof top, shall be kept dry. The building official shall instruct the removal of the insulation from the job when elevated moisture levels are found in the insulation or where panels cannot achieve 85-percent adhesion.

**1520.5.2** When applied in hot asphalt or cold adhesive, no insulation panel's dimension shall be greater than 4 feet (1219 mm).

**1520.5.3** Strip or spot mopping of insulation panels shall be used as an application method only when approved in the roof assembly Product Approval.

**1520.5.4** Where more than one layer of insulation is applied, joints between layers shall be staggered.

**1520.5.5** Application in approved cold adhesive shall be as detailed in the Product Approval and shall be in compliance with the required fire classification.

**1520.5.6** Nail boards or composite panels with a nailable surface may be applied to sloped decks for the application of prepared roof covering or metal roofing systems, providing that the nailing surface is minimum 1-5/32-inch (12 mm) exterior grade plywood sheathing, and has been attached to the deck with approved fastening assemblies in accordance with the windload requirements of Chapter 16 (High-Velocity Hurricane Zones). Composite panels shall be gapped a minimum of 1/8 inch (3.2 mm) to allow for expansion of the sheathing panel.

**1520.5.7** Suitable nailable decks installed over rigid board roof insulation in buildings of mean roof height of 35 feet (10.7 m) or less, shall be a minimum of 1-5/32-inch (12 mm) exterior grade plywood sheathing. These decks shall be fastened to every structural roof frame member or to the existing deck under the insulation, at intervals of not more than 24 inches (610 mm) apart, with a minimum #12 approved insulation fastener spaced at a maximum of 12 inches (305 mm) apart in one direction with a minimum penetration of 1 ½ inches (38 mm) into the structural member or deck. In these cases the maximum thickness of the rigid insulation board shall not exceed 2 inches (51 mm). An alternate method of attachment may be proposed, provided it is in compliance with Chapter 16 (High-Velocity Hurricane Zones), and it is prepared, signed and sealed by a Florida-registered architect or a Florida professional engineer, which architect or engineer shall be proficient in structural design.

**1520.5.8** Mechanical attachment of insulation panels at uneven areas shall be acceptable. Hollowing, cutting or scoring of insulation panels to provide contact shall not be acceptable.

***Section 1521. Add a section to read as shown:***

**SECTION 1521**

**HIGH-VELOCITY HURRICANE ZONES-**

**REROOFING**

**1521.1 General.** Materials and methods of application used for recovering or replacing an existing roof covering, system or assembly shall comply with the requirements set forth in Sections 1512 through 1525.

**1521.2** Repairs shall be carried out with roofing components as defined in this chapter having a Product Approval.

**1521.3** Repairs shall be carried out in such a manner as to not create additional ponding water.

**1521.4** Not more than 25 percent of the total roof area or roof section of any existing building or structure shall be repaired, replaced or recovered in any 12-month period unless the entire existing roofing system or roof section is replaced to conform to requirements of this code.

**1521.5** A roofing system shall not be applied over an existing roof or over an existing roof deck where the roof sheathing has not been fastened in compliance with this code or where the roof sheathing will not permit effective fastening or where sheathing is water soaked or deteriorated so that effective attachment is not possible. All areas of deteriorated sheathing shall be removed and replaced. The building official shall not be required to inspect the renailing of the sheathing under this section.

**1521.6** Structural concrete decks shall be allowed to dry or shall be dried prior to application of an ASTM D 41 or ASTM D 43, as required, or roofing system proprietary primer where the base sheet or base insulation layer is bonded to the concrete deck.

**1521.7** On lightweight insulating concrete, gypsum and cementitious wood fiber roof decks a field fastener withdrawal resistance test, in compliance with TAS 105, shall be carried out to confirm compliance with wind load requirements of Chapter 16 (High-Velocity Hurricane Zones).

**1521.7.1** If the tested fasteners exhibit a minimum characteristic resistance force less than 80 percent than that listed in the Product Approval, a structural engineer shall examine the deck's integrity and provide a proposed attachment specification. Such specification shall be submitted with the uniform roofing permit application for review and approval by the building official prior to the issuance of a roofing permit. Calculations for the attachment of the anchor sheet/base sheet or insulation over these deck types, shall be in compliance with RAS 117.

**1521.8** Steel decks shall be examined prior to recover for indication of corrosion. Any corrosion identified and exposed on the roof side shall be treated with a rust inhibitor, providing the field fastener withdrawal resistance values of the proposed mechanical fasteners comply with the requirements of Chapter 16 (High-Velocity Hurricane Zone) of this code. All steel decks less than 22 gage shall be field tested for fastener withdrawal resistance for compliance with Chapter 16 (High-Velocity Hurricane Zones) prior to application of a new roofing system. Test results shall be submitted with the uniform roofing permit application.

**1521.9** One additional roofing system may be applied over an original roofing assembly, providing the existing roofing assembly complies with the requirements of Section 1521.

**1521.10** If the recover roofing assembly is to be bonded to an existing roofing membrane, the existing roofing membrane shall be tested in compliance with TAS 124 for uplift resistance. The existing roofing membrane shall resist the design pressures calculated under Chapter 16 (High-Velocity Hurricane Zones) of this code. Test results shall be submitted with the uniform roofing permit application.

**1521.11** If the recover roofing assembly is mechanically attached through either a base sheet or insulation layer, the attachment assembly shall be field tested for fastener withdrawal resistance, in compliance with TAS 105, and laboratory tested for pull-over resistance to insure compliance with wind uplift requirements set forth in Chapter 16 (High-Velocity Hurricane Zones) of this code. Test results shall be submitted with the uniform roofing permit application. Recover roofing assembly anchor sheet or base sheet shall not be mechanically fastened directly to existing gravel roof unless all gravel is completely removed.

**1521.12** Moisture content of the existing roofing assembly to be covered by a new roofing system shall not exceed 5 percent by weight in the roofing membrane and 8 percent by weight in commercially manufactured rigid board roof insulation as verified by moisture survey performed in accordance with TAS 126. Test results shall be submitted with the Uniform Roofing Permit Application. Testing for moisture content shall not be required for existing lightweight insulating concrete, gypsum, and cementitious wood fiber roof decks. All existing lightweight insulating concrete, gypsum and cementitious wood fiber roof decks shall be tested per Section 1521.7 to confirm compliance with wind load requirements of Chapter 16 (High-Velocity Hurricane Zones).

**1521.13** Prior to starting the work the contractor has the responsibility of notifying the owner, by means of the roofing permit and required owners notification for roofing considerations herein, of any possibility of ponding water and recommend a structural review if ponding water is a possibility.

**1521.14** If the new roofing system is to be bonded to the existing roof surface, the surface shall be free of all loose gravel, dirt and silt and dry prior to commencement of the roofing application. All blisters shall be cut and repaired prior to roofing application.

**1521.14.1** If the existing roof surface has gravel embedded in hot asphalt, all loose gravel shall be removed together with any dirt and silt. The dry membrane surface shall be primed with ASTM D 41 primer or proprietary roofing system primer and allowed to dry thoroughly. A flood coat of ASTM D 312, type III or IV asphalt shall be applied to sufficient depth to cover the remaining embedded gravel. The prepared substrate shall be suitable for application of a new insulation layer only.

**1521.14.2** In the case of existing coal tar assemblies, the existing roof surface shall be primed with ASTM D 43 primer or covered with a mechanically attached separation board prior to application of a new coal tar assembly. If an existing coal tar assembly is to be covered with an asphalt applied roofing system, only the separation board is acceptable. The attachment of the entire assembly, including the separation board, shall meet the design pressure requirements set forth in Chapter 16 (High-Velocity Hurricane Zones).

**1521.14.3** Insulation shall have a Product Approval as a roofing component approved for use as a part of the roofing assembly. The insulation panels shall be bonded or mechanically attached in compliance with the Product Approval and RAS 117.

**1521.15** Where an existing sloped roof is sheathed with spaced sheathing, any existing prepared roof covering shall be removed. New sheathing shall be applied in compliance with Chapter 16 (High-Velocity Hurricane Zones), or open spacing shall be filled with dimensional lumber to create solid wood sheathing providing the spaced sheathing is in compliance with this code. Spaced sheathing is approved for use with wood shakes and wood shingles only.

**1521.16** No recover application shall take place over existing wood shingles, shakes, slate, tile or metal shingles.

**1521.17** Asphaltic shingle assemblies may be applied over one existing layer of asphaltic shingles having not more than 1/8-inch (3.2 mm) difference in level in the existing shingle material. Recover over an existing shingle system shall be with a product having a Product Approval as prepared roof covering, in strict compliance with the application method detailed in the product approval.

**1521.17.1** Application of elastomeric and or maintenance coating systems over existing asphalt shingles shall be in accordance with the shingle manufacturer’s approved installation instructions.

**1521.18** Sprayed polyurethane foam (PUF) and elastomeric coating systems may be applied over existing roofing assemblies providing the PUF system has obtained a product approval, the deck has been prepared in compliance with the product approval and this code, the application is in strict compliance with the foam manufacturer's published application instructions for the environmental conditions at the time of application and post-application inspections conform to RAS 109.

**1521.18.1** No PUF system shall be applied over existing composition shingles.

**1521.18.2** Upon completion of a PUF system, an inspection of the system shall be carried out by an authorized representative of the coating manufacturer. A certification shall be furnished to the building official within 30 days of completion, confirming that the quality control tests detailed in the PUF system Product Approval have been carried out with satisfactory results.

**1521.18.3** Should a PUF system have inadequate adhesion to meet the design pressures, as set forth in Chapter 16 (High-Velocity Hurricane Zones), the roofing system shall be removed and replaced with a roofing system tested to adequate adhesion. An additional inspection shall be required once the roofing system has been replaced. A field adhesion test may be requested by the building official during the application or at the completion of the project to confirm adequate adhesion.

**1521.18.4** The PUF system shall comply with Section 1521.

**1521.18.5** All PUF systems shall be installed by licensed roofing contractors holding an applicator's certificate from the manufacturer holding the product approval for the PUF system.

**1521.19** Roof coverings or roofing components, such as tile, slate or similar, shall not be applied over an existing roofing system.

**1521.20** Lightweight insulating ~~insulated~~ concrete shall not be applied over an existing roofing system unless the existing roofing assembly is verified to be adequate to accept the new lightweight insulating concrete and is in compliance with the testing required herein.

**~~1521.21 Existing ventilation.~~** ~~Ridge ventilation is recommended whenever possible to create airflow entering the soffit and exiting the ridge. Ridge ventilation shall not be installed without adequate soffit ventilation to draw outside air through the ridge void. When recovering, repairing or reroofing, the existing amount of attic ventilation shall not be reduced.~~

**~~Exception:~~** ~~Attic spaces designed by a Florida-licensed engineer or registered architect to eliminate the attic venting.~~ Reserved,

***Section 1522. Add a section to read as shown:***

**SECTION 1522**

**HIGH-VELOCITY HURRICANE ZONES-**

**ROOFTOP STRUCTURES AND COMPONENTS**

**1522.1 Rooftop structures.** Rooftop structures shall be designed and constructed in accordance with the *Florida Building Code*.

**1522.2 Rooftop mounted equipment.** All rooftop equipment and supports shall be secured to the structure in compliance with the loading requirements of Chapter 16 (High-Velocity Hurricane Zones). The use of wood "sleepers" shall not be permitted. ~~Where equipment and appliances requiring access are installed on roofs or elevated structures at a height exceeding 16 feet (4877 mm), such access shall be provided by a permanent approved means of access, the extent of which shall be from grade or floor level to the equipment and appliances' level service space. Such access shall not require climbing over obstructions greater than 30 inches (762 mm) high or walking on roofs having a slope greater than 4 units vertical in 12 units horizontal (33-percent slope).~~

~~Permanent ladders installed to provide the required access shall comply with the following minimum design criteria:~~

~~1. The side railing shall extend above the parapet or roof edge not less than 30 inches (762 mm).~~

~~2. Ladders shall have rung spacing not to exceed 14 inches (356 mm) on center.~~

~~3. Ladders shall have a toe spacing not less than 6 inches (152 mm) deep.~~

~~4. There shall be a minimum of 18 inches (457 mm) between rails.~~

~~5. Rungs shall have a minimum 0.75-inch (19 mm) diameter and be capable of withstanding a 300-pound (136.1 kg) load.~~

~~6. Ladders over 30 feet (9144 mm) in height shall be provided with offset sections and landings capable of withstanding 100 pounds (488.2 kg/m2) per square foot.~~

~~7. Ladders shall be protected against corrosion by approved means.~~

~~Catwalks installed to provide the required access shall be not less than 24 inches (610 mm) wide and shall have railings as required for service platforms~~

**~~Exception:~~** ~~This section shall not apply to Group R-3 occupancies. Minimum clearances below roof-mounted mechanical units shall be in accordance with Section 1509.7, Florida Building Code, Building.~~

**1522.3** Machinery, piping, conduit, ductwork, signs and similar equipment may be mounted on roofs in compliance with the following:

**1522.3.1** Permanently mounted rooftop equipment shall be installed to provide clearances, in accordance with Table 1522.3, to permit repairs, replacement and/or maintenance of the roofing system or any of its components.

**TABLE 1522.3**

**ROOF MOUNTED EQUIPMENT HEIGHT REQUIREMENTS**

|  |  |
| --- | --- |
| **WIDTH OF EQUIPMENT**  **(in.)** | **HEIGHT OF LEGS**  **(in.)** |
| Up to 24 | 14 |
| 25 to 36 | 18 |
| 37 to 48 | 24 |
| 49 to 60 | 30 |
| 61 and wider | 48 |

For SI:   1 inch = 25.4 mm.

**1522.3.2** When reroofing, recovering, performing repair or roof maintenance, and where the roof top equipment is moved to properly execute such work, the minimum clearances of the said equipment support shall be in accordance with Table 1522.3.

**1522.3.3** In buildings where the existing rooftop equipment, in the opinion of the building official, provides sufficient clearance to repair, recover, replace and/or maintain the roofing system or any of its components, such existing equipment need not comply with Table 1522.3.

**1522.3.4** Electrical conduit, mechanical piping or any other service lines running on the roof shall be raised not less than 8 inches (203 mm) above the finished roof surface.

**1522.3.5** Condensate lines shall not drain on the roofing system or any of its components. Condensate lines need not comply with the minimum clearance requirements.

***Section 1523. Add a section to read as shown:***

**SECTION 1523**

**HIGH-VELOCITY HURRICANE ZONES-**

**TESTING**

**1523.1 Scope.** This section defines the minimum testing requirements for substrates, roofing components, roofing systems and roofing assemblies. All roofing products shall be tested for physical properties, water-infiltration, uplift performance and fire resistance, as addressed within this code.

**1523.1.1** Testing requirements for physical properties of all roofing products shall be as set forth in TAS 110.

**~~1523.1.2~~** ~~Testing requirements for fire resistance shall be in compliance with ASTM E 108 or UL 790.~~ Reserved.

**1523.2 Application.** Testing for substrates, roofing components, roofing systems and roofing assemblies shall comply with the provisions herein and those of *Florida Building Code, Building*, TAS and RAS listed in this code.

**1523.3 Laboratory certification.** All testing required by this code shall be performed by an approved testing laboratory.

**1523.4 Margin of safety.** A margin of safety of 2:1 shall be applied to all wind uplift resistance test results. All in-situ (on site) testing shall have an applied 1.45:1 margin of safety.

**1523.5 Material labeling.** All products shall be identified with the product approval number or logo; or the manufacturer's name or logo. ASTM standard roll goods shall be marked with a yellow line to identify the ASTM standard, or such other marking indicated in the Product Approval.

**1523.5.1** All asphaltic shingles, tile products and metal roofing panels and clips shall be labeled on the underside with the *Florida Building Code, Building* insignia, or Product Approval number, or the wording "*Florida Building Code, Building* Product Approved," and manufacturer's initials or manufacturer's logo, or as specified in the manufacturer's Product Approval.

**1523.6 Testing requirements.**

**1523.6.1** The certification agency, at its discretion, may carry out, observe or delegate the inspection and testing to an independent testing laboratory for any approved product. Should the manufacturer fail to meet the minimum requirements set forth in this code or specifically listed in the manufacturer’s product control approval, the certification agency shall have the authority to withdraw the approval until such time as the manufacturer complies with the approved physical properties. The certification agency shall have the authority, and shall charge the manufacturer for any cost incurred.

**1523.6.2 Continuous roofing systems.** All continuous roofing systems shall be tested in compliance with TAS 110 and TAS 114 in its entirety. All continuous roofing systems shall resist a minimum of 90 pounds per square foot (psf) (4309 Pa) tested wind uplift pressure resistance. Continuous roofing system testing requirements shall be as follows:

**1523.6.2.1** Spray applied polyurethane foam. All spray applied polyurethane foam systems shall be tested in compliance to RAS 109 and TAS 110 and TAS 114.

**1523.6.2.1.1** Physical properties testing for acrylic coatings used on spray applied polyurethane foam roofing assemblies shall be tested in compliance with ASTM D 6083 and federal specification TTC-555B, Test Specification for Wind Driven Rain Infiltration Resistance.

**1523.6.3 Liquid applied roofing membranes systems.** All liquid applied roofing membranes systems shall be tested in compliance with TAS 114, in addition to the physical properties testing requirements set forth in TAS 110, and fire resistance.

**1523.6.3.1** For liquid applied acrylic roofing membrane assemblies, physical properties testing shall be in compliance with ASTM D 6083 and federal specification TTC-555B, Test Specification for Wind Driven Rain Infiltration Resistance.

**1523.6.4** The building official may request that a quality control field uplift test be carried out on a continuous roofing system in compliance with test procedure TAS 124. Single-ply systems are not required to meet the deflection requirements established in the test protocol. The roofing system shall resist the design pressures as calculated in compliance with Chapter 16 (High-Velocity Hurricane Zones), and as established in TAS 124.

**1523.6.4.1** Should a roofing system fail to meet a quality control field uplift test, the roofing contractor may propose to the building official an acceptable method of repair that is in compliance with the requirements of this code.

**1523.6.5 Discontinuous roofing systems.** All discontinuous roofing systems shall be tested in compliance with TAS 100 for wind-driven water infiltration resistance. Test specimens used for this test shall be constructed at the approved test facility. Testing requirements shall be as follows:

**1523.6.5.1 Asphaltic shingle systems.** All asphaltic shingle systems shall comply with the following requirements: TAS 100, TAS 107, ASTM D 3462 and ASTM D 3018. Asphaltic shingle systems shall have a quality control testing program by an approved independent listing agency having an unannounced follow-up visit. Follow-up test results shall be made available to the certification agency upon request.

**1523.6.5.2 Clay and cement roof tiles.** All roof tiles shall be tested in compliance with TAS 100. Physical properties testing for clay roof tiles shall be in compliance with ASTM ~~D~~C 1167. Physical properties testing for concrete roof tiles shall be in compliance with TAS 112. All approved roof tile manufacturers shall submit a quarterly TAS 112 Appendix A test report to the certification agency for review. All roof tiles shall resist a minimum wind uplift resistance as determined by Chapter 16 (High-Velocity Hurricane Zones) of this code and RAS 127. Clay and cement roof tile systems requirements are as follows:

**1523.6.5.2.1 Underlayment.** All underlayments used in discontinuous roof tile systems shall be tested in compliance with TAS 103 and TAS 104, unless otherwise specifically listed in the applicable RAS.

**1523.6.5.2.2 Mortar or adhesive set roof tile systems.** All mortar or adhesive set tile systems shall be tested for static uplift resistance in compliance with TAS 101, the results of which shall be listed in the system manufacturer's Product Approval.

**1523.6.5.2.2.1** Additionally, roof tile system manufacturers may test for wind characteristics in compliance with TAS 108, provided the system is determined to be air permeable by testing in compliance with TAS 116; and the tiles meet the size criteria set forth in TAS 108. The result from this testing shall be an aerodynamic multiplier (l) which represents the system's wind characteristics and shall be listed in the system manufacturer's Product Approval.

**1523.6.5.2.2.2** Systems which are tested for wind characteristics, in compliance with TAS 108 as specified above, shall have the results of the TAS 101 testing treated as attachment resistance moment (Mf), which is representative of the tile bond's resistance to overturning moment, and the tile's restoring moment due to gravity (Mg). Such systems shall use the system's aerodynamic multiplier (l) in conjunction with the system's attachment resistance moment (Mf) and restoring moment due to gravity (Mg), as determined from the TAS 101 static uplift testing. These results shall be used in conjunction with the attachment calculations outlined in RAS 127 as a moment-based system. Such calculations shall be submitted to the building official for review.

**1523.6.5.2.2.3** Systems that are not tested in compliance with TAS 108 as specified above shall have their product control approval based on the system's uplift minimum characteristic resistance force (F') , as determined from TAS 101 static uplift testing. These results shall be used in conjunction with the attachment calculations outlined in RAS 127 as an uplift-based system. Such calculations shall be submitted to the building official for review.

**1523.6.5.2.2.4** Testing in accordance with TAS 106 shall be considered a product application quality control test to determine the general adhesion properties of the system.

**1523.6.5.2.3 Mechanically fastened, rigid roofing systems.** All mechanically attached set tile systems shall be tested for static uplift resistance in compliance with TAS 102 or TAS 102(A), the results of which shall be listed in the system manufacturer's NOA.

**1523.6.5.2.3.1** Additionally, roof tile system manufacturers may test for wind characteristics in compliance with TAS 108, provided the system is determined to be air permeable by testing in compliance with TAS 116; and the tiles meet the size criteria set forth in TAS 108. The result from this testing shall be an aerodynamic multiplier (k) which represents the system's wind characteristics and shall be listed in the system manufacturer's Product Approval.

**1523.6.5.2.3.2** Systems which are tested for wind characteristics in compliance with TAS 108 as specified above shall have the results of the TAS 102 or TAS 102(A) testing treated as an attachment resistance moment (Mf) which is representative of the rigid component's attachment resistance to an overturning moment, and the tile's restoring moment due to gravity (Mg). Such systems shall use the system's aerodynamic multiplier (k), in conjunction with the system's attachment resistance moment (Mf) and restoring moment due to gravity (Mg), as determined from the TAS 102 or TAS 102(A) static uplift testing. These results shall be used in conjunction with the attachment calculations outlined in RAS 127 as a moment-based system. Such calculations shall be submitted to the building official for review.

**1523.6.5.2.3.3** Systems that are not tested in compliance with TAS 108 as specified above shall have their product control approval based on the system's uplift minimum characteristic resistance force (F' ), as determined from TAS 102 or TAS 102(A) static uplift testing. These results shall be used in conjunction with the attachment calculations outlined in RAS 127 as an uplift-based system. Such calculations shall be submitted to the building official for review.

**1523.6.5.2.3.4** TAS 106 quality control field static uplift testing shall be considered a product application quality control test to determine the general uplift resistance properties of the system.

**1523.6.5.2.4 Metal shingles/panels.** All metal roofing shall be tested in compliance with TAS 100. All metal roofing shall resist a minimum wind uplift resistance as determined by Chapter 16 (High-Velocity Hurricane Zones) for a roof slope of 9.5 degrees (0.0166 rad) and a roof mean height of 15 feet (4.6 m). All metal roofing systems testing requirements shall be as follows:

**1523.6.5.2.4.1** All metal roofing shall be test in compliance with requirements set forth in TAS 110 and TAS 125, and shall be tested for wind driven rain infiltration resistance in compliance with TAS 100.

**1523.6.5.2.4.2** Rigid metal shingle systems may be tested in an identical manner to nail-on or batten tile systems as set forth in this code.

**1523.6.5.2.5 Wood shingles or shakes.** All wood shingles and shakes shall be tested, as a system, for wind driven rain infiltration resistance in compliance with TAS 100. The same specimens as tested in TAS 100 shall be tested for pull-through tear resistance, and such values shall be listed in the manufacturer's Product Approval.

**1523.6.5.2.6 Fiber cement shingle or tile panels.** All fiber cement shingles or tiles shall resist a minimum wind uplift resistance as determined by Chapter 16 (High-Velocity Hurricane Zones) for a roof slope of 9.5 degrees (0.0166 rad) and a roof mean height of 15 feet (4.6 m). All fiber cement shingle or tiles shall be tested in compliance with the following requirements. Wind driven water resistance in compliance with TAS 100, physical properties in compliance with TAS 110, TAS 135 and uplift resistance.

**1523.6.5.2.6.1** Additionally, fiber cement tile system manufacturers may test for wind characteristics in compliance with TAS 108, provided the system is determined to be air permeable by testing in compliance with TAS 116 and the tiles meet the size criteria set forth in TAS 108. The result from this testing shall be an aerodynamic multiplier (k) which represents the system's wind characteristics and shall be listed in the system manufacturer's Product Approval.

**1523.6.5.2.6.2** Systems which are tested for wind characteristics in compliance with TAS 108 as specified above shall have the results of the TAS 102 or TAS 102(A) testing treated as an attachment resistance moment (Mf) which is representative of the rigid component's attachment resistance to an overturning moment, and the tile's restoring moment due to gravity (Mg). Such systems shall use the system's aerodynamic multiplier (l), in conjunction with the system's attachment resistance moment (Mf) and restoring moment due to gravity (Mg), as determined from the TAS 102 or TAS 102(A) static uplift testing. These results shall be used in conjunction with the attachment calculations outlined in RAS 127 as a moment-based system. Such calculations shall be submitted to the building official for review.

**1523.6.5.2.6.3** Systems that are not tested in compliance with TAS 108 as specified above shall have their product approval based on the system's uplift minimum characteristic resistance force (F' ), as determined from TAS 102 or TAS 102(A) static uplift testing. These results shall be used in conjunction with the attachment calculations outlined in RAS 115 as an uplift-based system. Such calculations shall be submitted to the building official for review.

**1523.6.5.2.6.4** TAS 106 quality control field static uplift testing shall be considered a product application quality control test to determine the general uplift resistance properties of the system.

**1523.6.5.2.7 Quarry roof slate.** All quarry roof slate shall be tested in compliance with TAS 100 and TAS 110.

**1523.6.5.2.8 Roof board insulation.** All roof board insulation shall be tested for physical properties as set forth in Section 7 of TAS 110.

**1523.6.5.2.9 Insulation fasteners, membrane fasteners and stress plates**. All insulation fasteners, membrane fasteners and stress plates shall be tested in compliance with TAS 117 Appendices A, B and C, and TAS 110 and TAS 114, Appendix E, Section 3, (DIN 50018), for corrosion resistance.

**1523.6.5.2.10 Roofing nails and tin-caps.** All roofing nails and tin-caps shall be tested for corrosion resistance in compliance with TAS 114, Appendix E, Section 2 (ASTM G 85).

**1523.6.5.2.11 Roof tile nails or fasteners.** All roof tile nails or fasteners, except those made of copper, monel, aluminum or stainless steel, shall be tested for corrosion in compliance with TAS 114, Appendix E, Section 2 (ASTM G 85), for salt spray for 1000 hr.

**1523.6.5.2.11.1** Tile fasteners used in coastal building zones, as defined in Chapter 16 (High-Velocity Hurricane Zone), shall be copper, monel, aluminum or stainless steel.

**1523.6.5.2.12 Roofing adhesives, mastics and coatings.** All roofing adhesives, mastics and coatings shall be tested in compliance with TAS 110 and TAS 121.

**1523.6.5.2.12.1** All roofing adhesives, mastics and coatings shall have a quality control testing program by an approved independent listing agency having unannounced follow-up visits.

**1523.6.5.2.12.2** Acrylic roof coatings shall be tested for physical properties in compliance with ASTM D 6083.

**1523.6.5.2.13 Ridge vents of metal, plastic or composition material.** All ridge vents shall be tested in compliance with TAS 100(A) for wind driven water infiltration. All ridge ventilators shall be restricted to roof mean height as tested in compliance with TAS 100(A), and shall be listed in the system manufacturer's Product Approval.

**1523.6.5.2.13.1** All plastic ridge ventilators shall be tested for physical properties as set forth in TAS 110 and Chapter 26 of this code.

**1523.6.5.2.13.2** All plastic ridge ventilator manufacturers shall have an unannounced follow-up quality control program from an approved listing agency. Follow-up test results shall be made available to the certification agency upon request.

**1523.6.5.2.14 Edge metal, flashings, and coping.** All edge metal, flashing and copings, not specifically described in RAS 111, shall be tested in compliance~~d~~ with TAS 110, TAS 111(A), TAS 111(B) or TAS 111(C), respectively.

**1523.6.5.2.15 Roof tile pre-mixed bagged mortar.** All premixed roof tile mortar shall comply with the requirements set forth in TAS 110 and TAS 123, and shall have a quality control testing program by an approved independent listing agency having unannounced follow-up visits. Follow-up test results shall be made available to the certification agency upon request.

**1523.6.5.2.16 Roof tile adhesive used in repair or supplemental tile attachment.** All roof tile adhesive used in repair or supplemental tile attachment shall comply with the requirements set forth in TAS 110 and TAS 123(A).

**1523.6.5.2.17 Roof tile adhesive used in adhesive set tiles systems.** All roof tile adhesive used in adhesive set tile systems shall comply with the requirements set forth in TAS 110 and TAS 123. Physical properties shall be as follows:

**1523.6.5.2.17.1** Tested for compressive strength in compliance with ASTM D 1621 with a minimum strength of 18 psi (121 kPa) parallel to rise, and 12 psi (82.7 kPa) perpendicular to rise.

**1523.6.5.2.17.2** Tested for density in compliance with ASTM D 1622 with a minimum density of 1.6 lb/ft3 (25.6 kg/m3).

**1523.6.5.2.17.3** Tested for tensile strength in compliance with ASTM D 1623 with a minimum requirement of 28 psi (193 kPa) parallel to rise.

**1523.6.5.2.17.4** Tested for dimensional stability taken from a free rise sample specimen. Tested in compliance with ASTM D 2126 with a maximum volume change of +0.07 percent volume change at -40°F (-40°C) for two weeks; and +6.0 percent volume change at 158°F (70°C) and 100 percent RH for two weeks.

**1523.6.5.2.17.5** Tested in compliance with ASTM D 2856 from a free rise sample specimen with a minimum requirement for 85 percent.

**1523.6.5.2.17.6** Tested for water absorption in compliance with ASTM D 2842 with a maximum requirement of 10 percent.

**1523.6.5.2.17.7** Tested in compliance with ASTM E 96 for moisture vapor transmission for a maximum of 3.1 perms.

***Section 1524. Add a section to read as shown:***

**SECTION 1524**

**HIGH-VELOCITY HURRICANE ZONES-**

**REQUIRED OWNERS NOTIFICATION FOR ROOFING CONSIDERATIONS**

**1524.1 Scope.** As it pertains to this section, it is the responsibility of the roofing contractor to provide the owner with the required roofing permit, and to explain to the owner the content of this section. The provisions of Chapter 15 of the Florida Building Code, Building govern the minimum requirements and standards of the industry for roofing system installations. Additionally, the following items should be addressed as part of the agreement between the owner and the contractor. The owner's initial in the designated space indicates that the item has been explained.

**1. Aesthetics-workmanship:** Reserved. ~~The workmanship provisions of Chapter 15 (High-Velocity Hurricane Zone) are for the purpose of providing that the roofing system meets the wind resistance and water intrusion performance standards. Aesthetics (appearance) are not a consideration with respect to workmanship provisions. Aesthetic issues such as color or architectural appearance, that are not part of a zoning code, should be addressed as part of the agreement between the owner and the contractor .~~

**2. Re-nailing wood decks.**  When replacing roofing, the existing wood roof deck may have to be re**-**nailed in accordance with the current provisions of Chapter 16 (High-Velocity Hurricane Zones) of the Florida Building Code, Building. (The roof deck is usually concealed prior to removing the existing roof system.)

**3. Common roofs:** Reserved.~~Common roofs are those which have no visible delineation between neighboring units (i.e., townhouses, condominiums, etc.). In buildings with common roofs, the roofing contractor and/or owner should notify the occupants of adjacent units of roofing work to be performed.~~

**4. Exposed ceilings.** Exposed, open beam ceilings are where the underside of the roof decking can be viewed from below. The owner may wish to maintain the architectural appearance; therefore, roofing nail penetrations of the underside of the decking may not be acceptable. The owner provides the option of maintaining this appearance.

**5. Ponding water:** Reserved.~~The current roof system and/or deck of the building may not drain well and may cause water to pond (accumulate) in low-lying areas of the roof. Ponding can be an indication of structural distress and may require the review of a professional structural engineer. Ponding may shorten the life expectancy and performance of the new roofing system. Ponding conditions may not be evident until the original roofing system is removed. Ponding conditions should be corrected.~~

**6. Overflow scuppers (wall outlets).**  It is required that rainwater flow off so that the roof is not overloaded from a buildup of water. Perimeter/edge walls or other roof extensions may block this discharge if overflow scuppers (wall outlets) are not provided. It may be necessary to install overflow scuppers in accordance with the requirements of: Chapter 15 and 16 herein and the *Florida Building Code, Plumbing*.

**~~7. Ventilation:~~** ~~Most roof structures should have some ability to vent natural airflow through the interior of the structural assembly (the building itself). The existing amount of attic ventilation shall not be reduced.~~ Reserved.

**~~Exception:~~** ~~Attic spaces, designed by a Florida-licensed engineer or registered architect to eliminate the attic venting, venting shall not be required.~~

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

~~Owner's/Agent's Signature Date Contractor's Signature~~

***Section 1525. Add to read as shown:***

**SECTION 1525**

**HIGH-VELOCITY HURRICANE ZONES**

**UNIFORM PERMIT APPLICATION**

***Florida Building Code* Edition 2013**

**High-Velocity Hurricane Zone Uniform Permit Application Form.**

**INSTRUCTION PAGE**

COMPLETE THE NECESSARY SECTIONS OF THE UNIFORM ROOFING PERMIT

APPLICATION FORM AND ATTACH THE REQUIRED DOCUMENTS AS NOTED BELOW:

|  |  |  |
| --- | --- | --- |
| **Roof System** | **Required Sections of the Permit Application Form** | **Attachments Required**  **See List Below** |
| Low Slope Application | A,B,C | 1,2,3,4,5,6,7 |
| Prescriptive BUR-RAS 150 | A,B,C | 4,5,6,7 |
| Asphaltic Shingles | A,B,D | 1,2,4,5,6,7 |
| Concrete or Clay Tile | A,B,D,E | 1,2,3,4,5,6,7 |
| Metal Roofs | A,B,D | 1,2,3,4,5,6,7 |
| Wood Shingles and Shakes | A,B,D | 1,2,4,5,6,7 |
| Other | As Applicable | 1,2,3,4,5,6,7 |

**ATTACHMENTS REQUIRED:**

|  |  |
| --- | --- |
| 1. | Fire Directory Listing Page |
| 2. | From Product Approval:  Front Page  Specific System Description  Specific System Limitations  General Limitations  Applicable Detail Drawings |
| 3. | Design Calculations per Chapter 16, or If Applicable, RAS 127 or RAS  128 |
| 4. | Other Component of Product Approval |
| 5. | Municipal Permit Application |
| 6. | Owners Notification for Roofing Considerations (Reroofing Only) |
| 7. | Any Required Roof Testing/Calculation Documentation |

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**High-Velocity Hurricane Zone Uniform Permit Application Form.**

**Section A (General Information)**

Master Permit No.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Process No. \_\_\_\_\_\_\_\_\_

Contractor’s Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Job Address\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**ROOF CATEGORY**

* Low Slope
* Mechanically Fastened Tile
* Mortar/Adhesive Set Tiles
* Asphaltic Shingles
* Metal Panel/Shingles
* Wood Shingles/Shakes
* Prescriptive BUR-RAS 150

**ROOF TYPE**

* New roof
* Reroofing
* Recovering
* Repair
* Maintenance

**ROOF SYSTEM INFORMATION**

Low Slope Roof Area (SF): Steep Sloped Roof AREA (SSF): Total (SF):

**Section B (Roof Plan)**

Sketch Roof Plan: Illustrate all levels and sections, roof drains, scuppers, overflow scuppers and overflow drains. Include dimensions of sections and levels, clearly identify dimensions of elevated pressure zones and location of parapets.

**[Note to editor: Use graph paper image]**

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**High-Velocity Hurricane Zone Uniform Permit Application Form.**

**Section C (Low Slope Application) Surfacing:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Fill in specific roof assembly components

And identify manufacturer **Fastener Spacing for Anchor/Base Sheet Attachment:**

(if a component is not used, identify as “NA”) Field: \_\_\_\_“ oc @ LP, # Rows \_\_\_@\_\_\_\_” oc

**System Manufacturer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Perimeter: \_\_\_\_” oc @ Lap, # Rows \_\_\_@ \_\_\_\_” oc**

**Product Approval No.: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Corner: \_\_\_\_” oc @ Lap, # Rows \_\_\_\_ @ \_\_\_\_” oc**

**Design Wind Pressures, From RAS 128 or Calculations: Number of Fasteners Per Insulation Board:**

**P1 \_\_\_\_ P2\_\_\_\_  P3\_\_\_\_ Field\_\_\_\_\_ Perimeter\_\_\_\_\_ Corner\_\_\_\_\_\_\_\_**

**Max. Design Pressure, from the specific Product Illustrate Components Noted and Details as Applicable:**

**Approval system: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** Wood blocking, Gutter, Edge Termination, Stripping,

Flashing, Continuous Cleat, CantStrip, Base Flashing,

**Deck:** Counter-Flashing, Coping, Etc.

**Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Indicate:** Mean Roof Height, Parapet Height, Height of

Base Flashing, Component Material, Material Thickness, **Gauge/Thickness:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** Fastener Type, Fastener Spacing or Submit Manufacturers

Details that Comply with RAS 111 and Chapter 16.

**Slope:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Anchor/Base Sheet & No. of Ply(s):\_\_\_\_\_\_\_\_\_\_**

**FT.**

**FT.**

**Anchor/Base Sheet Fastener/Bonding Material:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**F**

**Insulation Base layer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Parapet Height**

**Base Insulation Size and Thickness:\_\_\_\_\_\_\_\_\_\_**

**Base Insulation Fastener/Bonding Material:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ FT**

**Top Insulation Layer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Mean Roof Height

**Top Insulation Size and Thickness:\_\_\_\_\_\_\_\_\_\_\_**

**Top Insulation Fastener/Bonding Material**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Base Sheet(s) & No. of Ply(s:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Base Sheet Fastener/Bonding Material:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Ply Sheet(s) & No. of Ply(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Ply Sheet Fastener/Bonding Material:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Top Ply:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Top Ply Fastener/Bonding Material:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

***Florida Building Code* Edition 2013**

**High-Velocity Hurricane Zone Uniform Permit Application Form.**

**Section D (Steep Sloped Roof System)**

**Roof System Manufacturer:**

**Notice of Acceptance Number:**

**Minimum Design Wind Pressures, if Applicable (From RAS 127 or Calculations):**

**P1:\_\_\_\_\_\_\_\_\_ P2:\_\_\_\_\_\_\_\_\_\_\_ P3: \_\_\_\_\_\_\_\_\_\_\_**

**Florida Building Code Edition 2010**

**High-Velocity Hurricane Zone Uniform Permit Application Form.**

**Section E (Tile Calculations)**

**Steep Sloped Roof System Description**

|  |
| --- |
| **Deck Type:**  **Type Underlayment:**  **Insulation:**  **Fire Barrier:**  **Roof Slope: \_\_\_: 12**  **Fastener Type & Spacing:**  **Ridge Ventilation?\_\_\_\_\_ Adhesive Type:**  **Mean Roof Height: \_\_\_\_\_ Type Cap Sheet:**  **Roof Covering:**  **Type & Size**  ***Drip Edge*** |

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**High-Velocity Hurricane Zone Uniform Permit Application Form.**

**Section E (Tile Calculations)**

For Moment based tile systems, choose either Method 1 or 2. Compare the values for Mr with the values from Mf. If the Mf values are greater than or equal to the Mr values, for each area of the roof, then the tile attachment method is acceptable.

**Method 1 “Moment Based Tile Calculations Per RAS 127”**

(P1:\_\_\_\_ x λ \_\_\_\_ = \_\_\_\_) – Mg: \_\_\_\_ = Mr1 \_\_\_\_ Product Approval Mf \_\_\_\_\_\_\_\_\_\_

(P2:\_\_\_\_ x λ \_\_\_\_ = \_\_\_\_) – Mg: \_\_\_\_ = Mr2 \_\_\_\_ Product Approval Mf \_\_\_\_\_\_\_\_\_\_

(P3:\_\_\_\_ x λ \_\_\_\_ = \_\_\_\_) – Mg: \_\_\_\_ = Mr3 \_\_\_\_ Product Approval Mf \_\_\_\_\_\_\_\_\_\_

**Method 2 “Simplified Tile Calculations Per Table Below”**

Required Moment of Resistance (Mr) From Table Below \_\_\_\_\_\_\_ Product Approval Mf \_\_\_\_\_\_\_

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Mr required Moment Resistance\*** | | | | | |
| **Mean Roof Height Roof Slope** | **15’** | **20’** | **25’** | **30’** | **40’** |
| **2:12** | 34.4 | 36.5 | 38.2 | 39.7 | 42.2 |
| **3:12** | 32.2 | 34.4 | 36.0 | 37.4 | 39.8 |
| **4:12** | 30.4 | 32.2 | 33.8 | 35.1 | 37.3 |
| **5:12** | 28.4 | 30.1 | 31.6 | 32.8 | 34.9 |
| **6:12** | 26.4 | 28.0 | 29.4 | 30.5 | 32.4 |
| **7:12** | 24.4 | 25.9 | 27.1 | 28.2 | 30.0 |

\*Must be used in conjunction with a list of moment based tile systems endorsed by the Broward County Board of Rules and Appeals.

For Uplift based tile systems use Method 3. Compared the values for F’ with the values for Fr. If the F’ values are greater than or equal to the Fr values, for each area of the roof, then the tile attachment method is acceptable.

**Method 3 “Uplift Based Tile Calculations Per RAS 127”**

(P1:\_\_\_\_ x L \_\_\_\_ = \_\_\_\_ x w: = \_\_\_\_) – W: \_\_\_\_ x cos θ \_\_\_\_ = Fr1 \_\_\_\_ Product Approval F’ \_\_\_\_\_\_\_\_\_\_

(P2:\_\_\_\_ x L \_\_\_\_ = \_\_\_\_ x w: = \_\_\_\_) – W: \_\_\_\_ x cos θ \_\_\_\_ = Fr2 \_\_\_\_ Product Approval F’ \_\_\_\_\_\_\_\_\_\_

(P3:\_\_\_\_ x L \_\_\_\_ = \_\_\_\_ x w: = \_\_\_\_) – W: \_\_\_\_ x cos θ \_\_\_\_ = Fr3 \_\_\_\_ Product Approval F’ \_\_\_\_\_\_\_\_\_\_

**Where to Obtain Information**

|  |  |  |
| --- | --- | --- |
| **Description** | **Symbol** | **Where to find** |
| Design Pressure | P1 or P2 or P3 | RAS 127 Table 1 or by an engineering analysis prepared by PE based on ASCE 7 |
| Mean Roof Height | H | Job Site |
| Roof Slope | θ | Job Site |
| Aerodynamic Multiplier | λ | Product Approval |
| Restoring Moment due to Gravity | Mg | Product Approval |
| Attachment Resistance | Mf | Product Approval |
| Required Moment Resistance | Mg | Calculated |
| Minimum Attachment Resistance | F' | Product Approval |
| Required Uplift Resistance | Fr | Calculated |
| Average Tile Weight | W | Product Approval |
| Tile Dimensions | L = length W = width | Product Approval |
| All calculations must be submitted to the building official at the time of permit application. | | |

**Chapter 16 – Structural Design**

***Section 1601.1 Scope. Change to read as shown.***

**1601.1 Scope.** The provisions of this chapter shall govern the structural design of buildings, structures and portions thereof regulated by this code.

**Exception:** Buildings and structures located within the high-velocity hurricane zone shall comply with the provisions of  Section 1605, 1607, 1611, Sections 1616 through 1626, and, as applicable in flood hazard areas, Section 1612.

***Section 1603 – Construction Documents. Change Section 1603.1.7 to read as shown:***

**1603.1.7 Flood design data.** For buildings located in whole or in part in flood hazard areas as established in Section 1612.3, the documentation pertaining to design, if required in Section 1612.5, shall be included and the following information, referenced to the datum on the community’s Flood Insurance Rate Map (FIRM), shall be shown, regardless of whether flood loads govern the design of the building:

1. In flood hazard areas ~~not subject to high-velocity wave action~~ other than coastal high hazard areas, the elevation of the proposed lowest floor, including basement.

2. In ~~flood hazard areas subject to high-velocity wave action~~ coastal high hazard areas, the elevation to which any non-residential building will be dry floodproofed.

3. In ~~flood hazard areas subject to high-velocity wave action~~ coastal high hazard areas, the proposed elevation of the bottom of the lowest horizontal structural member of the lowest floor, including basement.

***Section 1603 – Construction Documents. Change Section 1603.1.9 to read as shown:***

**1603.1.9 Systems and components requiring special inspections for seismic resistance.** Reserved. *~~Construction documents~~* ~~or specifications shall be prepared for those systems and components requiring~~ *~~special inspection~~* ~~for seismic resistance as specified in Section 1705.11 by the~~ *~~registered design professional~~* ~~responsible for their design and shall be submitted for approval in accordance with Section 107.1. Reference to seismic standards in lieu of detailed drawings is acceptable.~~

***Section 1604 – General Design Requirements. Change Table 1604.3 to read as shown:***

**TABLE 1604.3  
DEFLECTION LIMITS a, b, c, h, i**

|  |  |  |  |
| --- | --- | --- | --- |
| **CONSTRUCTION** | ***L*** | ***S* or *W f*** | ***D* + *L*d,g,j** |
| Roof members:e Supporting plaster or stucco ceiling Supporting nonplaster ceiling Not supporting ceiling  Members supporting screen surface | *l*/360 *l*/240 *l*/180  — | *l*/360 *l*/240 *l*/180  — | *l*/240 *l*/180 *l*/120  *l/*60 |
| Floor members | *l*/360 | — | *l*/240 |
| Exterior walls and interior partitions: With plaster or stucco finishes With other brittle finishes With flexible finishes | — — — | *l*/360 *l*/240 *l*/120 | — — — |
| Farm buildings | — | — | *l*/180 |
| Greenhouses | — | — | *l* /120 |

For SI: 1 foot = 304.8 mm.

a.- i. (No Change)

j. Screen surfaces shall be permitted to include a maximum of 25% solid flexible finishes.

***Section 1604 – General Design Requirements. Change Table 1604.5 to read as shown:***

**TABLE 1604.5  
RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES**

|  |  |
| --- | --- |
| **RISK CATEGORY** | **NATURE OF OCCUPANCY** |
| I | Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to:  • Agricultural facilities.  • Certain temporary facilities.  • Minor storage facilities.  • Screen enclosures. |
| II | Buildings and other structures except those listed in Risk Categories I, III and IV |
| III | Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to:  • Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300.  • Buildings and other structures containing elementary school, secondary school or day care facilities with an occupant load greater than 250.  • Buildings and other structures containing adult education facilities, such as colleges and universities, with an occupant load greater than 500.  • Group I-2 occupancies with an occupant load of 50 or more resident care recipients but not having surgery or emergency treatment facilities.  • Group I-3 occupancies.  • Any other occupancy with an occupant load greater than 5,000a.  • Power-generating stations, water treatment facilities for potable water, waste water treatment facilities and other public utility facilities not included in Risk Category IV.  • Buildings and other structures not included in Risk Category IV containing quantities of toxic or explosive materials   that:  Exceed maximum allowable quantities per control area as given in Table 307.1(1) or 307.1(2) or per outdoor control area in accordance with the *~~International~~ Florida Fire Prevention Code*; and  Are sufficient to pose a threat to the public if releasedb. |
| IV | Buildings and other structures designated as essential facilities, including but not limited to:  • Group I-2 occupancies having surgery or emergency treatment facilities.  • Fire, rescue, ambulance and police stations and emergency vehicle garages.  • Designated earthquake, hurricane or other emergency shelters.  • Designated emergency preparedness, communications and operations centers and other facilities required for emergency response.  • Power-generating stations and other public utility facilities required as emergency backup facilities for Risk Category IV structures.  • Buildings and other structures containing quantities of highly toxic materials that:  Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the *~~International~~  Florida Fire Prevention Code*; and  Are sufficient to pose a threat to the public if releasedb.  • Aviation control towers, air traffic control centers and emergency aircraft hangars.  • Buildings and other structures having critical national defense functions.  • Water storage facilities and pump structures required to maintain water pressure for fire suppression. |

a.     For purposes of occupant load calculation, occupancies required by Table 1004.1.2 to use gross floor area calculations shall be permitted to use net floor areas to determine the total occupant load.

b.     Where approved by the building official, the classification of buildings and other structures as Risk Category III or IV based on their quantities of toxic, highly toxic or explosive materials is permitted to be reduced to Risk Category II, provided it can be demonstrated by a hazard assessment in accordance with Section 1.5.3 of ASCE 7 that a release of the toxic, highly toxic or explosive materials is not sufficient to pose a threat to the public.

***Section 1607 – Live Loads. Change Table 1607.1 to read as shown:***

**TABLE 1607.1**

**MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, Lo, AND**

**MINIMUM CONCENTRATED LIVE LOADSg**

(No change to body of Table 1607.1)

Footnotes a. – g. (No change)

h. See Section 1604.8.3 (HVHZ shall comply with Section 1616.5) for decks attached to exterior walls.

Footnotes i. – m. (No change)

***Section 1609 – Wind loads. Change Section 1609.1 to read as shown:***

**1609.1 Applications.** Buildings, structures and parts thereof shall be designed to withstand the minimum wind loads prescribed herein. Decreases in wind loads shall not be made for the effect of shielding by other structures. All exterior wall coverings and soffits shall be capable of resisting the design pressures specified for walls for components and cladding loads in accordance with Section 1609.1.1. Manufactured soffits shall be labeled in accordance with Section 1710.9 of this code.

***Section 1609 – Wind loads. Change Section 1609.1.1 to read as shown:***

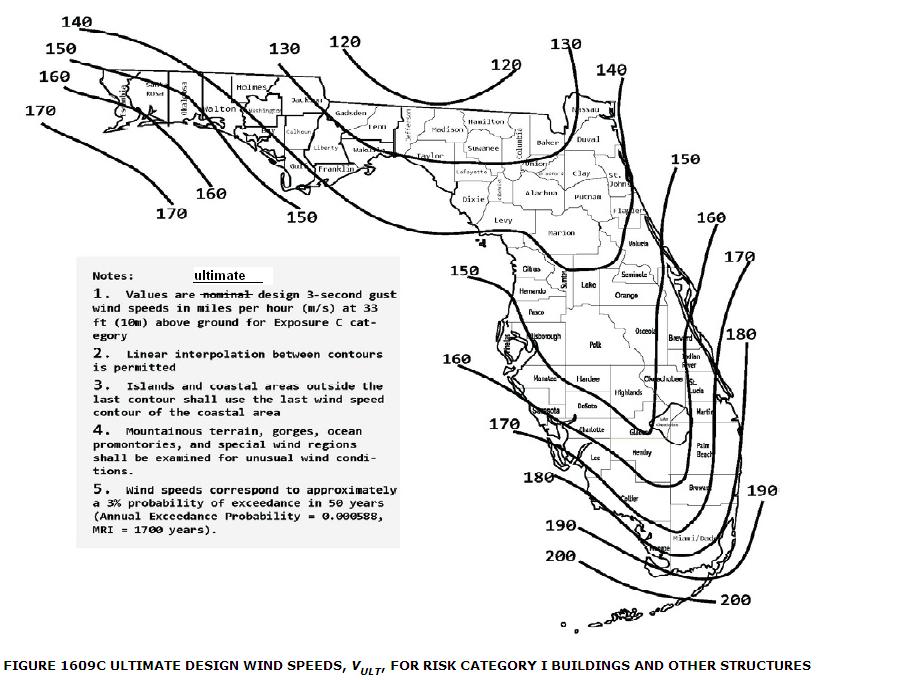
**1609.1.1 Determination of wind loads.** Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 30 of ASCE 7 or provisions of the alternate all-heights method in Section 1609.6. T~~he type of opening protection required, the ultimate design wind speed,~~ *~~Vult~~*~~, and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7.~~ Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

**Exceptions:**

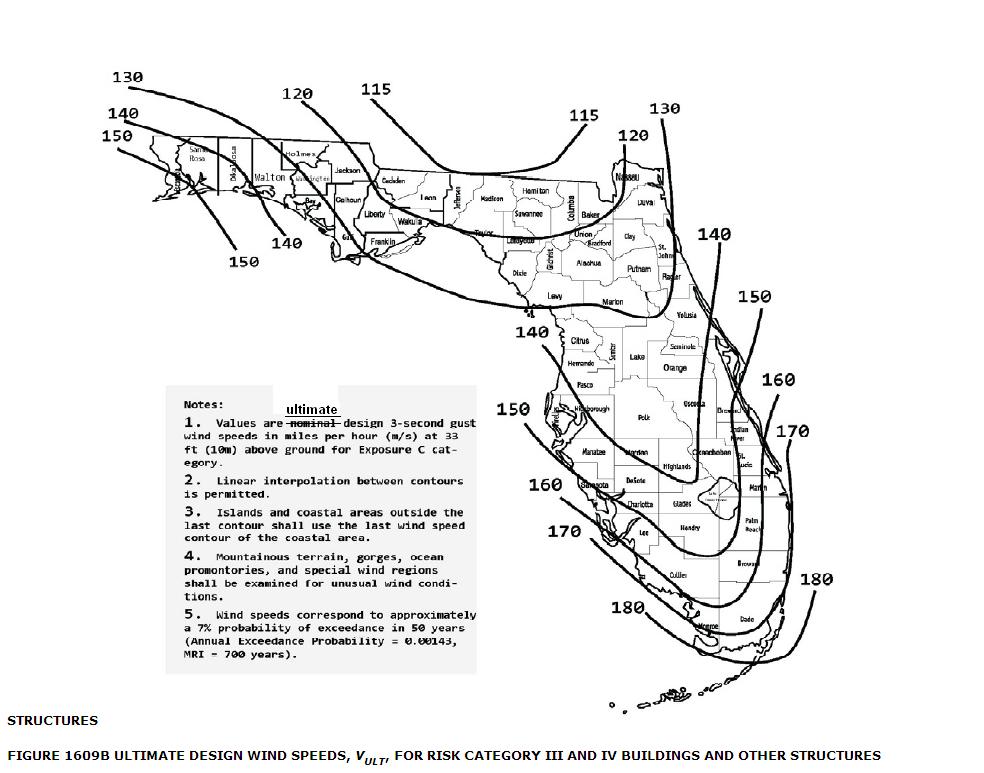
1. Subject to the limitations of Section 1609.1.1.1, the provisions of ICC 600 shall be permitted for applicable Group R-2 and R-3 buildings.
2. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AF&PA WFCM.
3. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AISI S230.
4. Designs using NAAMM FP 1001.
5. Designs using TIA-222 for antenna-supporting structures and antennas, provided the horizontal extent of Topographic Category 2 escarpments in Section 2.6.6.2 of TIA-222 shall be 16 times the height of the escarpment. Design using this standard shall be permitted for communication tower and steel antenna support structures.
6. Wind tunnel tests in accordance with Chapter 31 of ASCE 7.
7. Wind loads for screened enclosures shall be determined in accordance with Section 2002.4.

The wind speeds in Figures 1609A, 1609B and 1609C are ultimate design wind speeds, V*ult*, and shall be converted in accordance with Section 1609.3.1 to nominal design wind speeds, V*asd*, when the provisions of the standards referenced in Exceptions 1,3,4 ~~through~~ and 5 are used unless the wind provisions in the standards are based on Ultimate Wind Speeds as specified in Figures 1609A, 1609B, or 1609C or Chapter 26 of ASCE 7.

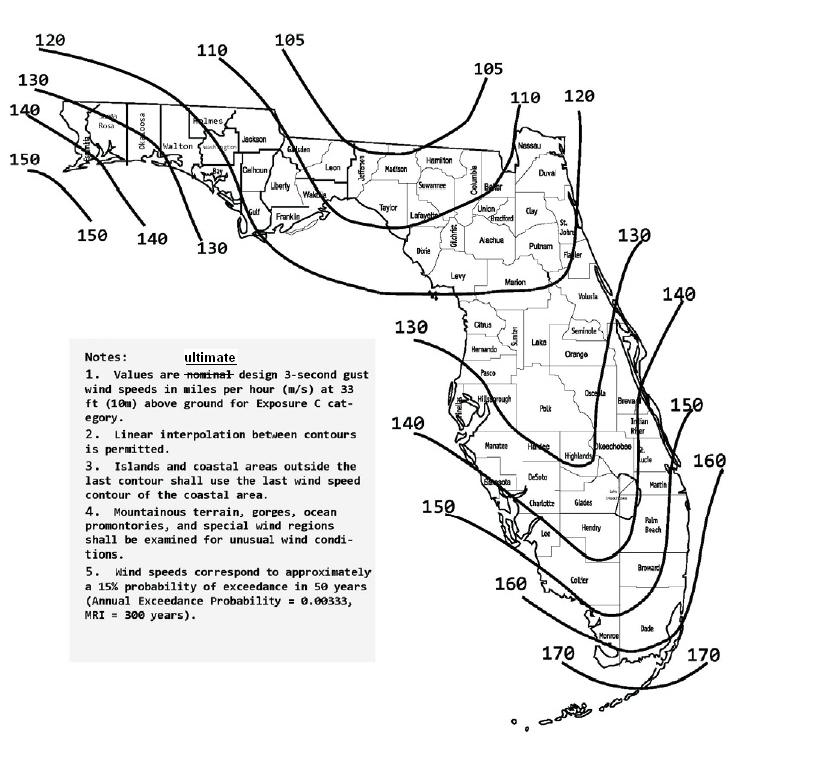
***Section 1609 – Wind Loads. Change Figures 1609A – 1609C to read as shown:***



**Figure 1609B Ultimate Design Wind Speeds, Vult For Risk Category III and IV Buildings and other Structures**



**Figure 1609A Ultimate Design Wind Speeds, Vult For Risk Category II Buildings and Other Structures**



**Figure 1609C Ultimate Design Wind Speeds, Vult For Risk Category I Buildings and other Structures**

***Section 1609 – Wind Loads. Change Section 1609.1.2 to read as shown:***

**1609.1.2 Protection of openings**. In *wind-borne debris regions*, ~~glazing~~ glazed openings in buildings shall be impact resistant or protected with an impact-resistant covering meeting the requirements of ~~, an~~ *~~approved~~* ~~impact-resistant standard or ASTM E 1996 and ASTM E 1886 referenced herein as follows: ,~~ SSTD 12, ANSI/DASMA 115 (for garage doors and rolling doors) or TAS 201, 202 and 203, AAMA 506. ASTM E 1996 and ASTM E 1886 referenced herein, or an *approved* impact-resistant standard as follows:

 1. Glazed openings located within 30 feet (9.1 m) of grade shall meet the requirements of the Large Missile Test of ASTM E 1996.

2. Glazed openings located more than 30 feet (9.1 m) above grade shall meet the provisions of the Small Missile Test of ASTM E 1996.

3. 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 windborne debris impact standards of this code.

4. Openings 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 Section 1609.1.2 above. Such spaces shall be permitted to be designed as either partially enclosed or enclosed structures.

**Exceptions**: 1. – 3. (No change)

***Section 1609 – Wind Loads. Change Table 1609.1.2 to read as shown:***

**TABLE 1609.1.2**

**WIND-BORNE DEBRIS PROTECTION FASTENING SCHEDULE FOR WOOD STRUCTURAL PANELSa, b, c, d**

(Table Contents – No Change)

a.  This table is based on a Vasd determined in accordance with Section 1609.3.1, of 140 mph ~~wind speeds~~ and a 45-foot mean roof height.

b. – d. (No Change)

***Section 1609 – Wind loads. Change Sections 1609.1.2.1 and 1609.1.2.2 to read as shown:***

**1609.1.2.1 Louvers.** Louvers protecting intake and exhaust ventilation ducts not assumed to be open that are located within 30 feet (9144 mm) of grade shall meet requirements of ANSI/AMCA 540 or shall be protected by an impact resistant cover complying with the large missile test of ASTM E 1996 or an approved impact-resistance standard. Louvers required to be open for life safety purposes such as providing a breathable atmosphere shall meet the requirements of AMCA 540.

**1609.1.2.2. Application of ASTM E 1996.** The text of Section 6.2.2 of ASTM E 1996 shall be substituted as follows:

6.2.2 Unless otherwise specified, select the wind zone based on the strength design wind speed, *Vult*, as follows:

6.2.2.1 *Wind Zone 1—*130 mph < ultimate design wind speed, *Vult* < 140 mph.

6.2.2.2 *Wind Zone 2—*140 mph < ultimate design wind speed, *Vult* < 150 mph at greater than one mile (1.6 km) from the coastline. The coastline shall be  measured from the mean high water mark.

6.2.2.3 *Wind Zone 3*—150 mph (58 m/s) <ultimate design wind speed, *Vult* < ~~160~~ 170 mph (63 m/s), or 140 mph (54 m/s) <  ultimate design wind speed, *Vult <* ~~160~~ 170 mph (63 m/s) and within one mile(1.6 km) of the coastline. The coastline shall be measured from the mean high water mark.

6.2.2.4 *Wind Zone 4*— ultimate design wind speed, *Vult* > ~~160~~ 170 mph (63 m/s)

***Section 1609 – Wind loads. Change Section 1609.1.2.2.1 to read as shown:***

**1609.1.2.2.1 Modifications to ASTM E 1886 and ASTM E 1996. Table 1 of ASTM E 1886 and ASTM E 1996 –**revise the third column to read as follows:

**Air Pressure Cycles**

0.2 to 0.5 Ppos1

0.0 to 0.6 Ppos

0.5 to 0.8 Ppos

0.3 to 1.0 Ppos

0.3 to 1.0 Pneg2

0.5 to 0.8 Pneg

0.0 to 0.6 Pneg

0.2 to 0.5 Pneg

Notes:

1.     Ppos= 0.6 x positive ultimate design load in accordance with ASCE 7.

2.     Pneg = 0.6 x negative ultimate design load in accordance with ASCE 7.

***Section 1609 – Wind loads. Add Section 1609.1.2.4 to read as shown:***

**1609.1.2.4 Impact resistant coverings.**

**1609.1.2.4.1** Impact resistant coverings shall be tested at 1.5 times the design pressure (positive or negative) expressed in pounds per square feet as determined by the Florida Building Code, Building Section 1609 or ASCE 7, for which the specimen is to be tested. The design pressures, as determined from ASCE 7, are permitted to be multiplied by 0.6.

**1609.1.2.4.2 Impact resistant coverings.** Impact resistant coverings shall be labeled in accordance with the provisions of Section 1710.8.

***Section 1609 – Wind loads. Change Sections 1609.3 to read as shown:***

**1609.3 Basic wind speed.** The ultimate design wind speed, *Vult*, in mph, for the determination of the wind loads shall be determined by Figures 1609A, 1609B and 1609C. The ultimate design wind speed, *Vult*, for use in the design of Risk Category II buildings and structures shall be obtained from Figure 1609A. The ultimate design wind speed, *Vult*, for use in the design of Risk Category III and IV buildings and structures shall be obtained from Figure 1609B. The ultimate design wind speed, *Vult*, for use in the design of Risk Category I buildings and structures shall be obtained from Figure 1609C. ~~The ultimate design wind speed,~~ *~~V~~~~ult~~*~~, for the special wind regions indicated near mountainous terrain and near gorges shall be in accordance with local jurisdiction requirements. The ultimate design wind speeds,~~ *~~V~~~~ult~~*~~, determined by the local jurisdiction shall be in accordance with Section 26.5.1 of ASCE 7. In nonhurricane-prone regions, when the ultimate design wind speed, V~~*~~ult~~*~~, is estimated from regional climatic data, the ultimate design wind speed, V~~*~~ult~~*~~, shall be determined in accordance with Section 26.5.3 of ASCE 7.~~  The exact location of wind speed lines shall be established by local ordinance using recognized physical landmarks such as major roads, canals, rivers and lake shores wherever possible.

***Section 1609 – Wind loads. Change Section 1609.4.2 to read as shown:***

**1609.4.2 Surface roughness categories.** A ground surface roughness within each 45-degree (0.79 rad) sector shall be determined for a distance upwind of the site as defined in Section 1609.4.3 from the categories defined below, for the purpose of assigning an exposure category as defined in Section 1609.4.3.

**Surface Roughness B.** Urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger.

**Surface Roughness C.** Open terrain with scattered obstructions having heights generally less than 30 feet (9144 mm). This category includes flat open country, and grasslands.  This surface roughness shall also apply to any building located within surface roughness B-type terrain where the building is within 100 feet horizontally in any direction of open areas of surface roughness C or D-type terrain that extends more than 600 feet (182.9 m) in the upwind direction and a width greater than 150 feet.

**Surface Roughness D.** Flat, unobstructed areas and water surfaces. This category includes smooth mud flats, salt flats and unbroken ice.

***Section 1609 – Wind loads. Add Section 1609.7 to read as shown:***

**1609.7 Garage doors and rolling doors.** Pressures from Table 1609.7(1) for wind loading actions on garage doors and rolling doors for buildings designed as enclosed shall be permitted.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TABLE 1609.7(1)**  **NOMINAL (ASD) GARAGE DOOR AND ROLLING DOOR WIND LOADS FOR A BUILDING WITH A MEAN ROOF HEIGHT OF 30 FEET LOCATED IN EXPOSURE B (PSF)1,2,3,4,5**  **ULTIMATE DESIGN WIND SPEED (Vult) DETERMINED IN ACCORDANCE WITH SECTION 1609.3 (MPH - 3 SECOND GUST)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Width (ft) | | Height (ft) | | | | 100 MPH | | | | 110 MPH | | | | 120 MPH | | | | 130 MPH | | | | 140 MPH | | 150 MPH | | | | 160 MPH | | | | 170 MPH | | | | 180 MPH | | | | 190 MPH | | | | | 200 MPH | |
| Roof Angle  0 - 10 degrees | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 8 | | 8.7 | | -9.8 | | 10.5 | | -11.9 | | 12.5 | | -14.2 | | 14.7 | | -16.6 | | 17.1 | | -19.3 | | 19.6 | | -22.2 | | 22.3 | | -25.2 | | 25.1 | | -28.5 | | 28.2 | | -31.9 | | 31.4 | | -35.5 | | | 34.8 | | -39.4 |
| 10 | 10 | | 8.4 | | -9.4 | | 10.2 | | -11.4 | | 12.1 | | -13.6 | | 14.2 | | -16.0 | | 16.5 | | -18.5 | | 18.9 | | -21.2 | | 21.5 | | -24.2 | | 24.3 | | -27.3 | | 27.3 | | -30.6 | | 30.4 | | -34.1 | | | 33.7 | | -37.8 |
| 14 | 14 | | 8.0 | | -8.9 | | 9.7 | | -10.8 | | 11.5 | | -12.8 | | 13.5 | | -15.0 | | 15.7 | | -17.4 | | 18.0 | | -20.0 | | 20.5 | | -22.8 | | 23.1 | | -25.7 | | 25.9 | | -28.8 | | 28.9 | | -32.1 | | | 32.0 | | -35.6 |
| Roof Angle  > 10 degrees | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 7 | | 9.6 | | -10.9 | | 11.4 | | -12.9 | | 13.7 | | -15.5 | | 16.1 | | -18.2 | | 18.5 | | -20.9 | | 21.3 | | -24.1 | | 24.3 | | -27.5 | | 27.6 | | -31.2 | | 30.6 | | -34.6 | | 34.2 | | | -38.6 | | 38.0 | | -43.0 |
| 16 | 7 | | 9.2 | | -10.3 | | 10.9 | | -12.2 | | 13.1 | | -14.6 | | 15.5 | | -17.2 | | 17.7 | | -19.7 | | 20.4 | | -22.7 | | 23.3 | | -26.0 | | 26.4 | | -29.4 | | 29.3 | | -32.6 | | 32.7 | | | -36.5 | | 36.4 | | -40.6 |
| 78 MPH | | | | 85 MPH | | | | 93 MPH | | | | 101 MPH | | | | 108 MPH | | | | 116 MPH | | | | | | 124 MPH | | | | 132 MPH | | | | 139 MPH | | | | 147 MPH | | | | | 155 MPH | | | |
| **Nominal Design Wind Speed (Vasd) converted from Ultimate Design Wind Speed per Section 1609.3.1** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

For SI: 1 foot = 304.8 mm, 1 mile per hour = 1.609 km/h, 1 psf = 47.88 N/m2

1. For effective areas or wind speeds between those given above the load may be interpolated, otherwise use the load associated with the lower effective area.

2. Table values shall be adjusted for height and exposure by multiplying by the adjustment coefficient in Table 1609.7(2)

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

4. Negative pressures assume door has 2 feet of width in building's end zone.

5. Table values include the 0.6 load reduction factor.

**TABLE 1609.7(2) ADJUSTMENT FACTOR FOR BUILDING HEIGHT AND EXPOSURE, (λ)**

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

|  |
| --- |
| For SI: 1 foot = 304.8 mm. |
| a. All table values shall be adjusted for other exposures and heights by multiplying by the above coefficients. |

***Section 1612 – Flood Loads. Add Section 1612.1.1 to read as shown:***

**1612.1.1 Cross references.** See Table 1612.1.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 1612.1**  **CROSS REFERENCES DEFINING FLOOD RESISTANT PROVISIONS**  **OF THE FLORIDA BUILDING CODE** | | | | |
| ***Florida Building Code – Building*** | | | | |
| Section |  | Section |  | |
| Chapter 1 | Administration | Chapter 14 | Exterior Walls | |
| 102 | Applicability | 1403 | Performance Requirements | |
| 107 | Construction Documents |  |  | |
| 110 | Inspections | Chapter 16 | Structural Design | |
| 111 | Certificates of Occupancy and Completion | 1601 | General | |
|  |  | 1603 | Construction Documents | |
| Chapter 2 | Definitions | 1605 | Load Combinations | |
| 202 | Definitions | 1612 | Flood Loads | |
|  |  |  |  | |
| Chapter 4 | Special Detailed Requirements Based on Use and Occupancy | Chapter 18 | Soils and Foundations | |
| 449 | Hospitals | 1804 | Excavation, Grading and Fill | |
| 450 | Nursing Homes | 1805 | Dampproofing and Waterproofing | |
| 454 | Swimming Pools and Bathing Places (Public And Private) |  |  | |
|  |  |  |  | |
| Chapter 8 | Interior Finishes | Chapter 30 | Elevators and Conveying Systems | |
| 801 | General | 3001 | General | |
|  |  |  |  | |
| Chapter 12 | Interior Environment | Chapter 31 | Special Construction | |
| 1203 | Ventilation | 3102 | Membrane Structures | |
|  |  |  |  | |
| ***Florida Building Code – Residential*** | | | | |
| Section |  | Section |  | |
| Chapter 2 | Definitions | Chapter 22 | Special Piping and Storage Systems | |
| 202 | Definitions | M2201 | Oil Tanks | |
|  |  |  |  | |
| Chapter 3 | Building Planning | Chapter 24 | Fuel Gas | |
| R301 | Design Criteria | G2404 (301) | General | |
| R309 | Garages and Carports |  |  | |
| R322 | Flood Resistant Construction | Chapter 26 | General Plumbing Requirements | |
|  |  | P2601 | General | |
| Chapter 4 | Foundations |  |  | |
| R401 | General | Chapter 27 | Plumbing Fixtures | |
| R404 | Foundation and Retaining Walls | P2705 | Installation | |
| R408 | Under-Floor Space |  |  | |
|  |  |  |  | |
| Chapter 13 | General Mechanical System Requirements | Chapter 30 | Sanitary Drainage | |
| M1301 | General | P3001 | General | |
|  |  |  |  | |
| Chapter 14 | Heating and Cooling Equipment | Chapter 31 | Vents | |
| M1401 | General | P3101 | Vent Systems | |
|  |  |  |  | |
| Chapter 16 | Duct Systems | Chapter 42 | Swimming Pools, Electrical | |
| M1601 | Duct Construction | R4201 |  | |
|  |  |  |  | |
| Chapter 17 | Combustion Air | Chapter 44 | High-Velocity Hurricane Zones | |
| M1701 | General | R4403 | High-Velocity Hurricane Zones – General | |
|  |  |  |  | |
| Chapter 20 | Boilers and Water Heaters | Chapter 45 | Private Swimming Pools | |
| M2001 | Boilers | R4501 |  | |
|  |  |  |  | |
| ***Florida Building Code – Existing*** | | | | |
| Section |  | Section |  | |
| Chapter 1 | Administration | Chapter 11 | Additions | |
| 101 | General | 1103 | Structural | |
| Chapter 2 | Definitions |  |  | |
| 202 | Definitions | Chapter 12 | Historic Buildings | |
| Chapter 3 | Compliance Methods | 1201 | General | |
| 301.1 | General |  |  | |
| Chapter 4 | Prescriptive Compliance Method |  |  | |
| 402 | Additions |  |  | |
| 403 | Alterations | Chapter 13 | Relocated or Moved Buildings | |
| 404 | Repairs | 1302 | Requirements | |
| Chapter 6 | Repairs |  |  | |
| 601 | General | Chapter 14 | Performance Compliance Methods | |
| 606 | Structural | 1401 | General | |
|  |  |  |  | |
| Chapter 7 | Alterations – Level I |  |  | |
| 701 | General |  |  | |
|  |  |  |  | |
| ***Florida Building Code – Mechanical*** | | | | |
| Section |  | Section | |  |
| Chapter 3 | General Regulations | Chapter 6 | | Duct Systems |
| M301 | General | M602 | | Plenums |
|  |  | M603 | | Duct Construction and Installation |
| Chapter 4 | Ventilation |  | |  |
| M401 | General | Chapter 12 | | Hydronic Piping |
|  |  | M1206 | | Piping Installation |
| Chapter 5 | Exhaust Systems |  | |  |
| M501 | General | Chapter 13 | | Fuel Oil Piping and Storage |
|  |  | M1305 | | Fuel Oil System Installation |
|  |  |  | |  |
| ***Florida Building Code – Plumbing*** | | | | |
| Section |  |  |  | |
| Chapter 3 | General Regulations |  |  | |
| P309 | Flood Hazard Resistance |  |  | |
|  |  |  |  | |
| ***Florida Building Code – Fuel Gas*** | | | | |
| Section |  |  |  | |
| Chapter 3 | General Regulations |  |  | |
| FG301 | General |  |  | |

***Section 1612 – Flood Loads. Change Section 1612.3 to read as shown:***

**1612.3 Establishment of flood hazard areas**. To establish *flood hazard areas*, the applicable governing authority shall, by local floodplain management ordinance, adopt a flood hazard map and supporting data. *~~Remainder unchanged~~* The flood hazard map shall include, at a minimum, areas of special flood hazard as identified by the Federal Emergency Management Agency in an engineering report entitled "The Flood Insurance Study for **[INSERT NAME OF JURISDICTION],**” dated **[INSERT DATE OF ISSUANCE],** as amended or revised with the accompanying Flood Insurance Rate Map (FIRM) and Flood Boundary and Floodway Map (FBFM) and related supporting data along with any revisions thereto. The adopted flood hazard map and supporting data are hereby adopted by reference and declared to be part of this section.

***Section 1612 – Flood Loads. Change Sections 1612.4 and 1612.5 to read as shown:***

***Add Section 1612.4.1 to read as shown:***

**1612.4 Design and construction.** The design and construction of buildings and structures located in flood hazard areas, including ~~flood hazard areas subject to high-velocity wave action~~ coastal high hazard areas, shall be in accordance with Chapter 5 of ASCE 7 and with ASCE 24.

**1612.4.1 Modification of ASCE 24.**  Table 6-1 and Section 6.2.1 in ASCE 24 shall be modified as follows:

1.      The title of Table 6.1 shall be “Minimum Elevation of Floodproofing, Relative to Base Flood Elevation (BFE) or Design Flood Elevation (DFE), in Coastal A Zones and in Other Flood Hazard Areas that are not ~~– Outside of~~ High Risk Flood Hazard Areas.”

2. Section 6.2.1 shall be modified to permit dry floodproofing in Coastal A Zones, as follows: “Dry floodproofing of nonresidential structures and nonresidential areas of mixed-use structures shall not be allowed unless such structures are located outside of High Risk Flood Hazard areas and Coastal High Hazard Areas~~, and Coastal A Zones~~. Dry floodproofing shall be permitted in Coastal A Zones provided wave loads and the potential for erosion and local scour are accounted for in the design. Dry floodproofing of residential structures or residential areas of mixed-use structures shall not be permitted.”

**1612.5 Flood hazard documentation.** The following documentation shall be prepared and sealed by a registered design professional and submitted to the building official:

1. For construction in flood hazard areas ~~not subject to high-velocity wave action~~ other than coastal high hazard areas:

1.1. The elevation of the lowest floor, including ~~the~~ basement, as required by the ~~lowest floor elevation~~ foundation inspection and the final inspection in Section 110.3.~~3.~~

1.2. For fully enclosed areas below the design flood elevation where provisions to allow for the automatic entry and exit of floodwaters do not meet the minimum requirements in Section 2.6.2.1, ASCE 24, construction documents shall include a statement that the design will provide for equalization of hydrostatic flood forces in accordance with Section 2.6.2.2 of ASCE 24.

1.3. For dry floodproofed nonresidential buildings, construction documents shall include a statement that the dry floodproofing is designed in accordance with ASCE 24.

2.   For construction in ~~flood hazard areas subject to high-velocity wave action~~ coastal high hazard areas:

2.1. The elevation of the bottom of the lowest horizontal structural member as required by the ~~lowest floor elevation~~ foundation inspection and the final inspection in Section 110.3. ~~3.~~

2.2. Construction documents shall include a statement that the building is designed in accordance with ASCE 24, including that the pile or column foundation and building or structure to be attached thereto is designed to be anchored to resist flotation, collapse and lateral movement due to the effects of wind and flood loads acting simultaneously on all building components, and other load requirements of Chapter 16.

2.3. For breakaway walls designed to have a resistance of more than 20 psf (0.96 kN/m2) determined using allowable stress design, construction documents shall include a statement that the breakaway wall is designed in accordance with ASCE 24.

***Section ~~1615~~ 1616 High-Velocity Hurricane Zones—General, Deflection, Volume Changes and Minimum Loads. Modify section ~~1615~~ 1616 to read as shown:***

**SECTION ~~1615~~ 1616 HIGH-VELOCITY HURRICANE ZONES—**

**GENERAL, DEFLECTION, VOLUME CHANGES AND MINIMUM LOADS**

**General: (previously s.1612)**

**~~1615.1~~ 1616.1 General design requirements.**

**~~1615.1.1~~** **1616.1.1** Any system, method of design or method of construction shall admit of a rational analysis in accordance with well-established principles of mechanics and sound engineering practices.

**~~1615.1.2~~** **1616.1.2** Buildings, structures and all parts thereof shall be designed and constructed to be of sufficient strength to support the estimated or actual imposed dead, live, wind, and any other loads, both during construction and after completion of the structure, without exceeding the allowable materials stresses specified by this code.

**1616.1.3** **Reserved.** ~~No building structure or part thereof shall be designed for live loads less than those specified in this Chapter or ASCE 7 with commentary, except as otherwise noted in this code.~~

**1616.1.4** **Reserved.** ~~The live loads set forth herein shall be assumed to include the ordinary impact but where loading involves unusual impact, provision shall be made by increasing the assumed live load.~~

**1616.1.5** **Reserved.** ~~In the design of floors, not less than the actual live load to be imposed shall be used. Special provisions shall be made for machine or apparatus loads where applicable.~~

**~~1616.1.6~~** **1616.1.6** Floor and roof systems shall be designed and constructed to transfer horizontal forces to such parts of the structural frame as are designed to carry these forces to the foundation. Where roofs or floors are constructed of individual prefabricated units and the transfer of forces to the building frame and foundation is totally or partially dependent on such units, the units and their attachments shall be capable of resisting applied loads in both vertical and both horizontal directions. Where roofs or floors are constructed of individual prefabricated units and the transfer of forces to the building frame and foundation is wholly independent of such units, the units and their attachments shall be capable of resisting applied loads normal to the surface, in and out.

**~~1615.2~~ 1616.2 General design for specific occupancies and structures.**

**~~1615.2.1~~ 1616.2.1 Fences.** Fences not exceeding 6 feet (1829 mm) in height from grade maybe designed for 75 mph(33 m/s) fastest mile wind speed or 115 mph (40 m/s) 3-second gust.

**~~1615.2.1.1~~ 1616.2.1.1 Wood fences.** Wood fence design shall be as specified by Section 2328.

**~~1615.2.2~~ 1616.2.2 Sway forces in stadiums.**

1. The sway force applied to seats in stadiums, grandstands, bleachers and reviewing stands shall be not less than 24 pounds per lineal foot (350 N/m), applied perpendicularly and along the seats.

2. Sway forces shall be applied simultaneously with gravity loads.

3. Sway forces need not be applied simultaneously with other lateral forces.

**~~1615.3~~ 1616.3 DEFLECTION**

**~~1615.3.1~~ 1616.3.1 Allowable deflections.** The deflection of any structural member or component when subjected to live, wind and other superimposed loads set forth herein shall not exceed the following:

1. Roof and ceiling or components supporting plaster . . . . . . . . . . . . . . . . . . . . . . .L/360

2. Roof members or components not supporting plaster under . . . . . . . . . . . . . . . .L/240

3. Floor members or components . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .L/360

4. Vertical members and wall members or components consisting of or supporting material that hardens in place, is brittle or lacks resistance to cracking caused by bending strains L/360

5. Vertical members and wall members or components not required to meet the conditions of Section 1616.3, item 4. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . L/180

6. Roof and vertical members, wall members and panels of carports, canopies, marquees, the roof projection is greater than 12 feet (3.7 m) in the direction of the span, for free-standing roofs and roofs supported by existing structures. Existing structures supporting such roofs shall be capable of supporting the additional loading . . . . . . .. . . . . . . . . L/180

7. For Group R3 occupancies only, roof and vertical members, wall members and panels of carports, canopies, marquees, patio covers, utility sheds and similar minor structures not to be considered living areas, where the roof projection is 12 feet (3.7 m) or less in the direction of the span and for free standing roofs and roofs supported by existing structures . . . . . L/80

8. Members supporting screens only . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . L/80

9. Storm shutters and fold-down awnings, which in the closed position shall provide a minimum clear separation from the glass of 1 inch (25 mm) but not to exceed 2 inches (51 mm) when the shutter or awning is at its maximum point of permissible deflection .. . L/30

10. Roofs and exterior walls of utility sheds having maximum dimensions of 10 feet (3 m) length, 10 feet (3 m) width, and 7 feet (2.1 m) height . . . . . . . . . . . . . . . . . . . . . . L/80

11. Roofs and exterior walls of storage buildings larger than utility sheds . . . . L/180

**~~1615.4~~ 1616.4 Volume change.** In the design of any building, structure or portion thereof, consideration shall be given to the relief of stresses caused by expansion, contraction and other volume changes.

***Change Section 1616.5 to read as shown:***

**1616.5 Live loads.**.~~Minimum uniformly distributed live loads shall not be less than as set forth in and Table 4-1 of ASCE 7 with commentary, except as otherwise noted in this code.~~ Live loads for balconies and decks shall be designed in accordance with ASCE 7.

**1616.6 Concentrated loads.** Reserved.~~Minimum concentrated loads shall not be less than as set forth in Table 4-1 of ASCE 7 with commentary, except as otherwise noted.~~

**~~1616.6.1 Concentrated loads on trusses.~~** ~~Any single panel point of the lower chord of roof trusses or any point of other primary structural members supporting roofs over manufacturing commercial storage and warehousing, and commercial garage floors shall be capable of safely carrying a suspended, concentrated load of not less than 2,000 pounds (8896 N) in addition to dead load. For all other occupancies, a minimum load of 200 pounds (890 N) shall be used.~~

**~~TABLE 1616~~**

**~~MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS~~**

**~~See Tables 4-1 of ASCE 7 with commentary,~~**

**~~except as otherwise noted below~~**

|  |  |
| --- | --- |
| **~~OCCUPANCY OR USE~~** | **~~LIVE LOAD POUNDS PER SQUARE FOOT~~** |
| ~~Assembly projection room~~ | ~~100~~ |
| ~~Balconies, Exterior (see also assembly) Serving private units of Group R occupancies and not for assembly use~~ | ~~60~~ |
| ~~Balconies serving occupancies 80 psf or less~~ | ~~80~~ |
| ~~All other balconies~~ | ~~100~~ |
| ~~Cabanas and bath house~~ | ~~50~~ |
| ~~Path of egress servicing occupancies 80 psf or less~~ | ~~80~~ |
| ~~Path of egress servicing occupancies over 80 psf~~ | ~~100~~ |
| ~~Recreational facilities Including bowling centers, pool rooms and similar uses~~ | ~~75~~ |
| ~~Storage: Light Medium Heavy~~ | ~~75 125 250~~~~1,2~~ |

~~For SI: 1 pound per square foot = 47.88 Pa.~~

~~1. Use actual equipment weight when greater.~~

~~2. Increase when occupancy exceeds this amount.~~

***Section 1616 High-Velocity Hurricane Zones—Roof Live Loads. Modify section 1616 to read as shown:***

**~~SECTION 1616~~**

**~~HIGH-VELOCITY HURRICANE ZONES-ROOF LIVE LOADS~~**

**~~1616.1 Minimum roof live loads.~~** ~~Roofs shall be designed for a live load of not less than 30 psf (1436 Pa), except as set forth herein.~~

**~~Exceptions:~~**

~~1. Glass areas of greenhouse roofs shall be designed for a live load of not less than 15 psf (718 Pa).~~

~~2. Ordinary pitched and curved roofs, with a slope of 11/2:12, or greater, where water is not directed to the interior of the roof, without parapet or other edge of roof drainage obstructions, may be designed for an allowable live load of not less than 20 psf (958 Pa).~~

~~3. Utility sheds shall be designed for a live load of not less than 15 psf (718 Pa).~~

**~~1616.2 Special purpose roofs.~~** ~~Roofs used for assembly, roof gardens, promenade or walkway purposes shall be designed for a minimum live load of 100 psf (4788 Pa). Other special purpose roofs shall be designed for appropriate loads as directed or approved by the building official.~~

**~~1616.3 Roof decking.~~** ~~Roof decking shall be designed to support the live load set forth in Section 1616.1 or a load of 100 pounds per foot (445 N) applied as a 1 foot (305 mm) wide strip perpendicular to, and at the center of, the span of the decking between supports, whichever is more critical.~~

***Section 1617 High-Velocity Hurricane Zones—Roof Drainage. Remove in its entirety in favor of the base code. Change Section 1617 to read as shown:***

**SECTION 1617**

**HIGH-VELOCITY HURRICANE ZONES-**

**ROOF DRAINAGE**

**RESERVED**

**~~1617.1 Roof drainage.~~** ~~Where parapets or curbs are constructed above the level of the roof, provision shall be made to prevent rain water from accumulating on the roof in excess of that considered in the design, in the event the rain water drains, conductors or leaders become clogged.~~

**~~1617.2~~** ~~Where roofs are not designed in accordance with Section 1617.1, overflow drains or scuppers shall be placed to prevent an accumulation of more than 5 inches (927 mm) of water on any portion of the roof. In determining the load that could result should the primary drainage system be blocked, the loads caused by the depth of water (i.e., head) needed to cause the water to flow out the scuppers or secondary drainage system shall be included.~~

**~~1617.3~~** ~~Drains or scuppers installed to provide overflow drainage shall be not less in aggregate area than as shown in Figure 1617.3, but not less than 4 inches (102 mm) dimension in any direction and shall be placed in parapets not less than 2 inches (51 mm) nor more than 4 inches (102 mm) above the low point of the finished roofing surface and shall be located as close as practical to required vertical leaders, conductors or downspouts. The roof area to be taken in the sizing of the scuppers is the horizontal projection, except that, where a building wall extends above the roof in such a manner as to drain into the area considered, the one-half of the area of the vertical wall shall be added to the horizontal projection.~~

**~~FIGURE 1617.3~~**

**~~REQUIRED AREA OF OVERFLOW SCUPPERS~~**

**~~1617.4~~** ~~All roofs shall be designed with sufficient slope or camber to assure adequate drainage after the long term deflection from dead load, or shall be designed to support maximum loads including possible ponding of water caused by deflection.~~

**~~1617.5~~** ~~Ponding loads. Roofs shall be designed to preclude instability from ponding loads.~~

**~~1617.6~~** ~~Each portion of a roof shall be designed to sustain the loads of all rainwater that could accumulate on it if the primary drainage system for that portion is obstructed. Ponding instability shall be considered in this situation. If the overflow drainage provisions contain drain lines, such lines shall be independent of any primary drain lines.~~

***Section 1618 High-Velocity Hurricane Zones— Special Load Considerations. Modify section 1618 to read as shown:***

**SECTION 1618**

**HIGH-VELOCITY HURRICANE ZONES-**

**SPECIAL LOAD CONSIDERATIONS**

**1618.1 Floors.** Reserved.~~In the design of floors, consideration shall be given to the effect of known or probable concentration of loads, partial concentrations of loads, partial load, vibratory, transitory, impact and machine loads. Design shall be based on the load or combination of loads that produces the higher stresses.~~

**1618.2 Below grade structures.** Reserved.

**~~1618.2.1~~** ~~In the design of basements, tanks, swimming pools and similar below grade structures, provisions shall be made for the forces resulting from hydrostatic pressure and lateral pressure of adjacent soil.~~

**~~1618.2.2~~** ~~For the lateral loads of soil on below grade structures, unless substantiated by more specific information, the angle of repose of fragmental rock and natural confined sand shall be 30 degrees and the angle of repose of filled soil and muck shall be 15 degrees to a horizontal line.~~

**~~1618.2.3~~** ~~For the hydrostatic pressure on any floor below a ground water level, calculations shall be based on full hydrostatic pressure, and such floors shall be designed for live load without hydrostatic uplift, and hydrostatic uplift without live load.~~

**~~1618.2.4~~** ~~Private swimming pools may be designed with an approved hydrostatic relief valve or other device capable of preventing the pool water from being pumped to a level lower than the surrounding ground water but such device shall not be credited for more than 2 feet (610 mm) of the difference of head between the pool bottom and the flood criteria.~~

**1618.3 Helistops/heliports.** Reserved.~~In addition to other design requirements of this chapter, heliport and helistop loading or touchdown areas shall be designed for the maximum stress induced by the following:~~

~~1. Dead load plus actual weight of the helicopter.~~

~~2. Dead load plus two single concentrated impact loads approximately 8 feet (2.4 m) apart anywhere on the touchdown pad (representing each of the helicopter's two main landing gear, whether skid type or wheeled type), with each concentrated load covering 1 square foot (0.09 m2) and having a minimum magnitude of 0.75 times the gross weight of the helicopter. Both loads acting together total a minimum of 1.5 times the gross weight of the helicopter.~~

~~3. The dead load plus a uniform live load of 60 psf (2873 Pa).~~

**1618.4 Safeguards.** Reserved**.** ~~Safeguards shall be required in and around buildings and structures such as covers, railings, stair-railings, handrails or other safeguards as defined in the regulations of the Occupational Safety and Health Administration (OSHA) 29 CFR Part 1910 as applied to permanent structures and as specified herein.~~

**~~1618.4.1~~** ~~Open or glazed wall openings; open or glazed sides of balconies, landings and other walking surfaces; unenclosed floor and roof openings; roofs used for other than services for the building or structure and any other abrupt differences in level exceeding 30 inches (762 mm), including yard areas, shall be provided with safeguards not less than 42 inches (1067 mm) in height.~~

**~~1618.4.2~~** ~~Safeguards may be omitted at loading docks, truck wells and similar locations where it is apparent that the edge of the higher level is for loading, and on docks, seawalls and decorative fountains where the lower level is the water surface.~~

**~~1618.4.3~~** ~~Safeguards in and around buildings of other than Group R occupancies shall be provided with additional rails, vertical pickets or ornamental filler below the top rail that will reject a 6-inch (152 mm) diameter object.~~

**~~1618.4.4~~** ~~Safeguards in and around buildings of Group R occupancies shall provide protection for children by providing additional rails, vertical pickets or an ornamental filler below the top rail which will reject a 4-inch (102 mm) diameter object; permitting, however, such ornamental fillers to have individual openings not exceeding 64 square inches (.04 m2) in area.~~

**~~1618.4.5~~** ~~Where a balustrade is used to comply with the requirements of this paragraph, the maximum clearance between the bottom rail of the balustrade and the adjacent surface shall not exceed 2 inches (51 mm). For safeguards on stairs, the 2-inch (51 mm) clearance shall be measured from the bottom rail of the balustrade to a line passing through the tread nosings.~~

**1618.4.6 Railing.**

**1618.4.6.1** Reserved. ~~Railings, stair-railings and other similar safeguards shall be designed to resist a load of 50 pounds per lineal foot (74 kg/m) or a concentrated load of 200 pounds (690 N) applied in any direction at the top of such barriers at any location on the safeguard, whichever condition produces the maximum stresses. The reactions and stresses caused by the above referenced uniform and concentrated loads shall be considered not be acting simultaneously.~~

**1618.4.6.2** Reserved**.** ~~Intermediate rails, balusters and panel fillers shall be designed for a uniform horizontal load of not less than 25 psf (1197 Pa) over the gross area of the guard, including the area of any openings in the guard, of which they are a part without restriction by deflection. Reactions resulting from this loading need not be added to the loading specified in Section 1618.4.6.1 in designing the main supporting members of guards.~~

**1618.4.6.3** Laminated glazing will be permitted as an equal alternate to pickets, if tested by an accredited laboratory to satisfy the resistance requirements of this code for wind, live and kinetic energy impact loading conditions. The kinetic energy impact loading shall comply with ANSI Z97.1 using a 400 foot-pound (542 N) energy impact. The safety requirements of the impact test shall be judged to have been satisfactorily met if breakage does not occur or numerous cracks and fissures occur but no shear or opening through which a 3-inch (76 mm) diameter sphere may freely pass. The glass panel shall remain within the supporting frame.

**1618.4.6.4** If the posts that support the top rail of exterior railings are substituted with glass, the assembly shall be tested to TAS 201, where the impacted glass continues to support the top rail and all applicable loads after impact.

**~~1618.4.7~~** ~~Areas in all occupancies from which the public is excluded requiring such protection may be provided with vertical barriers having a single rail midway between a top rail and the walking surface.~~

**1618.5 Vehicle safeguard barriers.** Reserved.~~Vehicle safeguard barriers are required in parking garages whenever there is a difference in level exceeding 1 foot (305 mm).~~

**~~1618.5.1~~** ~~Unless separate pedestrian safeguards are provided vehicle safeguard barriers shall, in addition to the requirements of this section, meet all other requirements of Section 1618.4.~~

**~~1618.5.2~~** ~~The requirement of Section 1618.4.3 for the rejection of a 6-inch (152 mm) diameter object shall be met when the barrier is subjected to a horizontal load of 25 psf (1197 Pa), applied as specified in Section 1618.4.6.2.~~

**~~1618.5.3~~** ~~Vehicle safeguard barriers shall be capable of resisting a minimum horizontal ultimate load of 10,000 pounds (44.5 kN) applied 18 inches (457 mm) above the floor at any point in the barrier system. This load need not be applied in combination with loads specified in Section 1618.4.6.1 and Section 1618.4.6.2. Vehicle safeguard barrier systems of metal framing, concrete or masonry may be designed by allowable stress design for a concentrated horizontal load of 7,500 pounds (33 361 N) in lieu of the 10,000 pounds (44.5 kN) ultimate load specified above.~~

**1618.6 Special requirements for cable safeguard barriers.** Reserved.

**~~1618.6.1~~** ~~Horizontal deflection under design load shall not exceed 18 inches (457 mm).~~

**~~1618.6.2~~** ~~The design load shall be assumed to be resisted by not more than two cables.~~

**~~1618.6.3~~** ~~The cable system including anchors shall be protected against corrosion.~~

**~~1618.6.4~~** ~~Cable tension under design load shall not exceed 90 percent of the yield strength of the cable.~~

**~~1618.6.5~~** ~~The uppermost cable shall be at least 42 inches (1067 mm) above the adjacent surface. Cables shall not be spaced more than 6 inches (152 mm) apart.~~

**~~1618.6.6~~** ~~An installation plan prepared by the structural engineer of record shall be submitted to the building official for his or her approval.~~

**~~1618.6.7~~** ~~Installation shall be witnessed by the structural engineer of record who shall certify the following:~~

~~1. That the installation has been in accordance with the approved installation plan.~~

~~2. That the initial tension designated by the structural engineer of record has been provided in all cables.~~

~~3. That all anchors have been seated at a total load, including initial tension, equal to 85 percent of the yield strength of the cable, unless a positive locking device is provided that does not require a tension jack for the tensioning of the barrier strand.~~

**~~1618.6.8~~** ~~Drawings shall indicate the initial tension, the expected increase in tension under vehicular impact and the required maximum capacity of the strand barrier system.~~

**1618.7 Ornamental projections.** Reserved.~~Ornamental cantilevered projections on the exterior of buildings shall be designed for not less than 60 psf live load (2873 Pa) or 200 pounds per lineal foot (2919 N/m) applied at the outer edge, whichever is more critical.~~

**1618.8 Interior wall and partitions.** Reserved.~~Permanent, full-height interior walls and partitions shall be designed to resist a lateral live load not less than 5 psf (239 Pa) and if sheathed with lath and plaster, deflection at this load shall not exceed L/360.~~

**1618.9 Load combination.** Reserved.~~The safety of structures shall be checked using the provisions of 2.3 and 2.4 of ASCE 7 with commentary. Flood Load Fa mentioned in these load combinations shall be in accordance with Chapter 5 of ASCE 7.~~

**~~Exception:~~** ~~Increases in allowable stress shall be permitted in accordance with ACI 530/ASCE 5/TMS 402 provided the load reduction factor of 0.75 of combinations 4 and 6 of ASCE 7 Section 2.4.1 shall not be applied.~~

***Section 1619 High-Velocity Hurricane Zones— Live Load Reductions. Modify section 1619 to read as shown:***

**SECTION 1619**

**HIGH VELOCITY HURRICANE ZONES —**

**LIVE LOAD REDUCTIONS**

**RESERVED**

**~~1619.1 Application.~~** ~~No reduction in assumed live loads set forth in this section shall be allowed in the design of columns, walls, beams, girders and foundations, except as permitted by the provisions of Section 4.7 ASCE 7 with commentary.~~

~~Exceptions:~~

~~1. No reduction of the assumed live loads shall be allowed in the design of any slabs, joists or other secondary members, except as set forth herein.~~

~~2. No reduction in roof live loads shall be permitted except as set forth by Section 1616.1.~~

**~~1619.2 Allowable live load reductions.~~**

**~~1619.2.1~~** ~~Permissible reduction in live loads shall be as provided in Section 4.7 of ASCE 7 with commentary.~~

**~~1619.2.2~~** ~~Limitations on live load reduction shall be as noted in Section 4.7 of ASCE 7 with commentary.~~

**~~1619.2.3~~** ~~No reduction in live loads shall be permitted for buildings or structures of Group A assembly occupancy.~~

***Section 1620 High-Velocity Hurricane Zones— Wind Loads. Add section 1620 to read as shown:***

**SECTION 1620**

**HIGH-VELOCITY HURRICANE ZONES—**

**WIND LOADS**

**1620.1** Buildings and structures, and every portion thereof, shall be designed and constructed to meet the requirements of Chapters 26 through 31 of ASCE 7.

**1620.2** Wind velocity (3-second gust) used in structural calculations shall be as follows:

**Miami-Dade County**

Risk Category I Buildings and Structures: 165 mph

Risk Category II Buildings and Structures: 175 mph

Risk Category III and IV Buildings and Structures: 186 mph

**Broward County**

Risk Category I Buildings and Structures: 156 mph

Risk Category II Buildings and Structures: 170 mph

Risk Category III and IV Buildings and Structures: 180 mph

**1620.3** All buildings and structures shall be considered to be in Exposure Category C, unless Exposure Category D applies, as defined in Section 26.7 of ASCE 7.

**1620.4** For wind force calculations, roof live loads shall not be considered to act simultaneously with the wind load.

**1620.5** Utility sheds shall be designed for a wind load of not less than 15 psf (718 Pa).

**1620.6**   **Rooftop structures and equipment~~s~~.** The lateral force on rooftop structures and equipment with Af less than(0.1Bh) located on buildings of all heights shall be determined from Equation 29.5-1 of ASCE 7 in which the value of GCf shall be taken as 3.1. GCf shall be permitted to be reduced linearly from 3.1 to 1.1 as the value of Af is increased from (0.1Bh) to (Bh). The value of G from Section 26.9 of ASCE 7 shall not be used. Additionally, a simultaneous uplift force shall be applied, given by Equation 29.5-1 of ASCE 7 in which GCf = 1.5 and Af is replaced by the horizontal projected area, Ar, of the rooftop structure or equipment. For the uplift force GCf shall be permitted to be reduced linearly from 1.5 to 1.0 as the value of Ar is increased from (0.1BL) to (BL).

***Section 1621 High-Velocity Hurricane Zones— Overturning Moment and Uplift. Add section 1621 to read as shown:***

**SECTION 1621**

**HIGH-VELOCITY HURRICANE ZONES—**

**OVERTURNING MOMENT AND UPLIFT**

**1621.1** Computations for overturning moment and uplift shall be based on ASCE 7.

**1621.2** Overturning and uplift stability of any building, structure or part thereof taken as a whole shall be provided, and shall be satisfied by conforming to the load combination requirements of ASCE 7.

***Section 1622 High-Velocity Hurricane Zones— Screen Enclosures. Add section 1622 to read as shown:***

**SECTION 1622**

**HIGH-VELOCITY HURRICANE ZONES—**

**SCREEN ENCLOSURES**

**1622.1 Screen enclosures.**

**1622.1.1** The wind loads on screen surfaces shall be per ASCE 7 based on the ratio of solid to gross area.

**1622.1.2** Design shall be based on such loads applied horizontally inward and outward to the walls with a shape factor of 1.3 and applied vertically upward and downward on the roof with a shape factor of 0.7.

**Exception:** Screen enclosures shall be permitted to be designed in accordance with the AAF Guide to Aluminum Construction in High Wind Areas. Construction documents based on the AAF Guide to Aluminum Construction in High Wind Areas shall be prepared and signed a

nd sealed by an Florida registered architect or engineer.

**1622.2 Windbreakers.**

**1622.2.1** Vinyl and acrylic glazed panels shall be removable. Removable panels shall be identified as removable by a decal. The identification decal shall essentially state "Removable panel SHALL be removed when wind speeds exceed 75 mph (34 m/s)." Decals shall be placed such that the decal is visible when the panel is installed.

**1622.2.2** Permanent frame shall be designed per section 1620 and 1622.1.2.

***Section 1623 High-Velocity Hurricane Zones— Live Loads Posted and Occupancy Permits. Add section 1623 to read as shown:***

**SECTION 1623**

**HIGH-VELOCITY HURRICANE ZONES—**

**LIVE LOADS POSTED AND OCCUPANCY PERMITS**

**RESERVED**

**~~1623.1 Live loads posted.~~** ~~The live loads in every building, structure or part thereof of Group F, M or S Storage occupancy approved by the building official shall be shown on plates supplied by the owner or his authorized agent, in that part of each space to which such loads apply.~~

**~~1623.1.1~~** ~~Such plates shall be of approved durable materials displaying letters and figures not less than 3/8 inch (9.5 mm) in height, and shall be securely affixed to the structure in conspicuous places.~~

**~~1623.1.2~~** ~~Such notices shall not be removed or defaced and where defaced, removed or lost, it shall be the responsibility of the owner to cause replacement as soon as possible.~~

**~~1623.2 Occupant loads.~~** ~~Plans for proposed buildings or structures of Group F, M or S storage occupancy areas in buildings of any occupancy shall show the allowable loading for each portion of the floor and roof areas and certificates of use and occupancy, as defined in Section 110 of this code, shall not be issued until such loads are posted as set forth in Section 1623.1.~~

**~~1623.2.1 Change in occupant load.~~** ~~No change in the occupancy of any building shall be made until a certificate of occupancy has been issued certifying that the building official has approved the building as suitable for the loads characteristic of the proposed occupancy.~~

**~~1623.2.2 Maximum floor and roof loads observed.~~** ~~It shall be unlawful at any time to place, or permit to be placed, on any floor or roof of a building or structure, a load greater than that for which the floor or roof is approved by the building official.~~

***Section 1624 High-Velocity Hurricane Zones— Foundation Design. Add section 1624 to read as shown:***

**SECTION 1624**

**HIGH-VELOCITY HURRICANE ZONES—**

**FOUNDATION DESIGN**

**RESERVED**

**~~1624.1 Design procedure.~~** ~~The minimum area of a footing or number of piles under a foundation shall be determined in the following manner:~~

**~~1624.1.1~~** ~~The total load of the column that has the largest percentage of the live load to the total load shall be divided by the allowable soil pressure or pile capacity.~~

**~~1624.1.2~~** ~~The balance soil pressure or pile capacity shall be determined by dividing the total dead load by the area of the footing or the number of piles.~~

**~~1624.1.3~~** ~~The minimum area of other footings or number of piles shall be designed on the basis of their respective dead loads only.~~

**~~1624.1.4~~** ~~In no case shall the total load of the combined dead, live, wind and any other loads exceed the allowable bearing pressure of the soil for capacity of any pile upon which the foundation is supported.~~

**~~1624.1.5~~** ~~The live load used in the above calculations may be the total reduced live load in the member immediately above the foundation.~~

**~~1624.1.6~~** ~~The building official may require submittal of design computations employed in foundation design.~~

**~~1624.2 Wind effects~~**~~. Reserved.~~

**~~1624.2.1~~** ~~Reserved.~~

***Section 1625 High-Velocity Hurricane Zones— Load Tests. Add section 1625 to read as shown:***

**SECTION 1625**

**HIGH-VELOCITY HURRICANE ZONES—**

**LOAD TESTS**

**1625.1 Application.** Whenever there is insufficient evidence of compliance with the provisions of this code or evidence that any material or any construction does not conform to the requirements of this code, or in order to substantiate claims for alternate materials or methods of construction, the building official may require testing by an approved agency, at the expense of the owner or his agent, as proof of compliance. Testing methods shall be as specified by this code for the specific material.

**1625.2** **Testing method**. Such testing shall follow a nationally recognized standard test, or when there is no standard test procedure for the material or assembly in question, the building official shall require the material or assembly under dead plus live load shall deflect not more than as set forth in Section 1616.3, and that the material or assembly shall sustain dead load plus twice the live load for a period of 24 hours, with a recovery of at least 80 percent or a 100 percent recovery after one-half test load.

**1625.3** **Alternate test methods.** When elements, assemblies or details of structural members are such that their load-carrying capacity, deformation under load, or deflection cannot be calculated by rational analysis, their structural performance shall be established by test in accordance with test procedures as approved by the building official based on consideration of all probable conditions of loading.

**1625.4** **Fatigue load testing.** Where cladding assemblies (including cladding and connections) or roofing framing assemblies (including portions of roof structure and connections) are such that their load-carrying capacity or deformation under load cannot be calculated by rational analysis, the assemblies may be tested to resist the fatigue loading sequence given by Table 1625.4.

**TABLE 1625.4**

**FATIGUE LOADING SEQUENCE**

|  |  |
| --- | --- |
| **RANGE OF TEST** | **NUMBER OF CYCLES1** |
| 0 to 0.5pmax2 | 600 |
| 0 to 0.6pmax | 70 |
| 0 to 1.3pmax | 1 |
| 1. Each cycle shall have minimum duration of 1 second and a maximum duration of 3 seconds and must be performed in a continuous manner. 2. Pmax = 0.6 x ultimate design load in accordance with ASCE7*.* | |

Assemblies shall be tested with no resultant failure or distress and shall have a recovery of at least 90 percent over maximum deflection.

Any cladding assembly not incorporated into the *Florida Building Code, Building* after successfully completing the impact test outlined in Section 1626, shall be subject to fatigue loading testing and shall obtain product approval by the building official.

***Section 1626 High-Velocity Hurricane Zones— Impact Tests for Wind-Borne Debris. Add a section to read as shown:***

**SECTION 1626**

**HIGH-VELOCITY HURRICANE ZONES—**

**IMPACT TESTS FOR WIND-BORNE DEBRIS**

**1626.1** All parts or systems of a building or structure envelope such as, but not limited, to exterior walls, roof, outside doors, skylights, glazing and glass block shall meet impact test criteria or be protected with an external protection device that meets the impact test criteria. Test procedures to determine resistance to wind-borne debris of wall cladding, outside doors, skylights, glazing, glass block, shutters and any other external protection devices shall be performed in accordance with this section.

**Exception:** The following structures or portion of structures shall not be required to meet the provisions of this section:

a. Roof assemblies for screen rooms, porches, canopies, etc. attached to a building that do not breach the exterior wall or building envelope and have no enclosed sides other than screen.

b. Soffits, soffit vents and ridge vents. Size and location of such vents shall be detailed by the designer and shall not compromise the integrity of the diaphragm boundary.

c. Vents in a garage with four or fewer cars. Size and location of such vents shall be detailed by the designer and shall not exceed the minimum required area by more than 25 percent.

d. Exterior wall or roof openings for wall- or roof-mounted HVAC equipment.

e. Openings for roof-mounted personnel access roof hatches.

f. 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 windborne debris impact standards of this code.

g. Louvers as long as they properly considered ASCE 7 in the design of the building.

h. Buildings and structures for marinas, cabanas, swimming pools, and greenhouses.

i.       Exterior balconies or porches under existing roofs or decks enclosed with screen or removable vinyl and acrylic panels complying with Section 1622.1or Section 1622.2 shall not be required to be protected and openings in the wall separating the unit from the balcony or porch shall not be required to be protected unless required by other provisions of this code.

**1626.2 Large missile impact tests.**

**1626.2.1** This test shall be conducted on three test specimens per test protocols TAS201 and TAS203. This test shall be applicable to the construction units, assemblies and materials to be used up to and including 30 feet (9.1 m) in height in any and all structures.

**1626.2.2** The test specimens shall consist of the entire assembled unit, including frame and anchorage as supplied by the manufacturer for installation in the building, or as set forth in a referenced specification, if applicable. Fasteners used in mounting the test specimen shall be identical in size and spacing to what is used in field installations.

**1626.2.3** The large missile shall be comprised of a piece of timber having nominal dimensions of 2 inches by 4 inches (51 mm by 102 m) weighing 9 pounds (4.1 kg).

**1626.2.4** The large missile shall impact the surface of each test specimen at a speed of 50 feet per second (15.2 m/s); 80 feet per second (24.38 m/s) for Risk Category IV - Essential Facility buildings or structures.

**1626.2.5** Each test specimen shall receive two impacts except as noted in Sections 1626.2.5.1 and 1626.2.5.2, the first within a 5-inch (127 mm) radius circle having its center on the midpoint of the test specimen and the second within a 5-inch (127 mm) radius circle in a corner having its center in a location 6 inches (152 mm) away from any supporting members.

**1626.2.5.1** For window, glass block, fixed glass and skylight assemblies, both impacts shall be to glass or other glazing infill. For test specimens with more than one light of glass, a single light closest to the center of the assembly shall be selected and impacted twice in accordance with Section 1626.2.5. If a light of glass is sufficiently small to cause the 5-inch (127 mm) radius circle to overlap, two separate lights shall be impacted one time each.

**1626.2.5.1.1** For window, fixed glass and skylight assemblies comprised of different glass thickness, types of glass or different types of glazing infill, each separate thickness or type shall be impacted twice in accordance with Section 1626.2.5.

**1626.2.5.2** For doors, wall cladding and external protection devices, both impacts shall be to the thinnest section through the assembly. For doors, wall cladding and external protection devices with horizontal and/or vertical bracing, both impacts shall be within a single area that is not reinforced and shall be in accordance with Section 1626.2.5.

**1626.2.5.2.1** For doors with glass, the glass shall be impacted twice and the thinnest section through the assembly that is not glass shall be impacted twice in accordance with Section 1626.2.5.

**1626.2.6** In the case of glazing, if the three test specimens that comprise a test successfully reject the two missile impacts, they shall then be subjected to the cyclic pressure loading defined in Table 1626.

**1626.2.6.1** If external protection devices are employed to protect windows, fixed doors or skylights, they must resist the large missile impacts specified in Sections 1626.2.3 and 1626.2.4 without deformations which result in contact with the windows, fixed glass, glass block, and doors or skylights they are intended to protect.

**1626.2.6.2** If external protection devices are not designed to be air tight, following the large missile impact test, they must resist an application of force corresponding to those listed in Table 1625.4 (fatigue load testing) without detaching from their mountings. The acting pressure cycles shall be simulated with loads applied through a mechanical system attached to the shutter specimen to apply uniformly around the shutter perimeter a force equal to the product of the required pressure and the area of the shutter specimen.

**1626.2.7** If air leakage through the test specimen is excessive, tape may be used to cover any cracks and joints through which leakage is occurring. Tape shall not be used when there is a probability that it may significantly restrict differential movement between adjoining members. It is also permissible to cover both sides of the entire specimen and mounting panel with a single thickness of polyethylene film no thicker than 0.050 mm (2 mils). The technique of application is important in order that the full load is transferred to the specimen and that the membrane does not prevent movement or failure of the specimen. Apply the film loosely with extra folds of material at each corner and at all offsets and recesses. When the load is applied, there shall be no fillet caused by tightness of plastic film.

**1626.2.8** A particular system of construction shall be deemed to comply with this recommended practice if three test specimens reject the two missile impacts without penetration and resist the cyclic pressure loading with no crack forming longer than 5 inches (127 mm) and 1/16 inch (1.6 mm) wide through which air can pass.

**1626.2.9** If only one of the three test specimens in a test fails to meet the above listed criteria, one retest of this system of construction (another test sequence with three specimens) shall be permitted.

**1626.3 Small missile impact test.**

**1626.3.1** This test shall be conducted on three test specimens per test protocols TAS201 and TAS203. This test shall be applicable to the construction units, assemblies, and materials to be used above 30 feet (9.1 m) in height in any and all structures~~.~~; Risk Category IV - Essential Facility buildings or structures shall follow the large missile impact testing in section 1626.2.4 at 50 feet per second (15.2 m/s).

**1626.3.2** Each test specimen shall consist of the entire assembled unit, including frame and anchorage as supplied by the manufacturer for installation in the building, or as set forth in a referenced specification, if applicable. The fasteners used in mounting the test specimen shall be identical in size and spacing to those to be used in field installations.

**1626.3.3** The missiles shall consist of solid steel balls each having a mass of 2 grams (0.07 oz) (+/-5 percent) with a 5/16-in. (7.9 mm) nominal diameter.

**1626.3.4** Each missile shall impact the surface of each test specimen at a speed of 130 feet per second (40 m/s).

**1626.3.5** Each test specimen shall receive 30 small missile impacts except as noted in Sections 1626.3.5.1 and 1626.3.5.2 delivered in groups of 10 at a time: the first 10 distributed uniformly over a 2 square foot (0.19 m2) area located at the center of the test specimen, the second 10 distributed uniformly over a 2 square foot area (0.19 m2) located at the center of the long dimension of the specimen near the edge, and the third 10 distributed uniformly over a 2 square foot (0.19 m2) area located at a corner of the specimen.

**1626.3.5.1** For window and skylight assemblies, all impacts shall be to glass or other glazing infill. For test specimens with more than one light of glass, a single light closest to the center of the assembly shall be selected and impacted in accordance with Section 1626.3.5. If a light of glass is sufficiently small to cause the 5-inch (127 mm) radius circles to overlap, separate lights may be impacted; however, there must be a total of 30 impacts within the assembly.

**1626.3.5.1.1** For window, fixed glass and skylight assemblies comprised of glass with different thickness, types of glass or different types of glazing infill, each separate thickness or type shall be impacted in accordance with Section 1626.3.5.

**1626.3.5.2** For doors, wall cladding and external protection devices, all impacts shall be to the thinnest section through the assembly. For doors, wall cladding and external protection devices with horizontal and/or vertical bracing, all impacts shall be within a single area that is not reinforced and shall be impacted in accordance with Section 1626.3.5.

**1626.3.5.2.1** For doors with glass, the glass shall be impacted in accordance with Section 1626.3.5 and the thinnest section through the assembly that is not glass shall be impacted in accordance with Section 1626.3.5.

**1626.3.6** In the case of glazing, after completion of the small missile impacts, each test specimen shall then be subjected to the cyclic pressure loading defined in Table 1626.

**1626.3.6.1** If external protection devices are employed to protect windows, doors or skylights, they must resist the small missile impacts specified in Sections 1626.3.3 and 1626.3.4 without deformations that result in contact with the windows, glass, doors or skylights they are intended to protect.

**1626.3.6.2** If external protection devices are not designed to be air tight, following the small missile impact test, they must resist an application of force corresponding to those listed in Table 1625.4 (fatigue load testing) without detaching from their mountings. The acting pressure cycles shall be simulated with loads applied through a mechanical system attached to the shutter specimen to apply uniformly around the shutter perimeter a force equal to the product of the required pressure and the area of the shutter specimen.

**1626.3.7** If air leakage through the test specimen is excessive, tape may be used to cover any cracks and joints through which leakage is occurring. Tape shall not be used when there is a probability that it may significantly restrict differential movement between adjoining members. It is also permissible to cover both sides of the entire specimen and mounting panel with a single thickness of polyethylene film no thicker than 0.050 mm (2 mils). The technique of application is important for the full load to be transferred to the specimen and to insure the membrane does not prevent movement or failure of the specimen. Apply the film loosely with extra folds of material at each corner and at all offsets and recesses. When the load is applied, there shall be no fillet caused by tightness of plastic film.

**1626.3.8** A particular system of construction shall be deemed to comply with this test if three test specimens reject the small missile impacts without penetration and resist the cyclic pressure loading with no crack forming longer than 5 inches (127 mm) and 1/16 inch (1.6 mm) in width through which air can pass.

**1626.3.9** If only one of the three test specimens in a test fails to meet the above listed criteria, one retest of the system (another test sequence with three specimens) of construction shall be permitted.

**1626.4 Construction assemblies deemed to comply with Section 1626.**

1. Exterior concrete masonry walls of minimum nominal 8-inch (203 mm) thickness, constructed in accordance with Chapter 21 (High-Velocity Hurricane Zones) of this code.

2. Exterior frame walls or gable ends constructed in accordance with Chapter 22 and Chapter 23 (High-Velocity Hurricane Zones) of this code, sheathed with a minimum 19/32-inch (15 mm) CD exposure 1 plywood and clad with wire lath and stucco installed in accordance with Chapter 25 of this code.

3. Exterior frame walls and roofs constructed in accordance with Chapter 22 (High-Velocity Hurricane Zones) of this code sheathed with a minimum 24-gage rib deck type material and clad with an approved wall finish.

4. Exterior reinforced concrete elements constructed of solid normal weight concrete (no voids), designed in accordance with Chapter 19 (High-Velocity Hurricane Zones) of this code and having a minimum 2-in. (51 mm) thickness.

5. Roof systems constructed in accordance with Chapter 22 or Chapter 23 (High-Velocity Hurricane Zones) of this code, sheathed with a minimum 19/32-inch (15 mm) CD exposure 1 plywood or minimum nominal 1-inch (25 mm) wood decking and surfaced with an approved roof system installed in accordance with Chapter 15 of this code.

All connectors shall be specified by the building designer of record for all loads except impact.

**TABLE 1626**

**CYCLIC WIND PRESSURE LOADING**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **INWARD ACTING PRESSURE** | | | **OUTWARD ACTING PRESSURE** | | |
| **RANGE** | | **NUMBER OF CYCLES**1 | **RANGE** | **NUMBER OF CYCLES**1 | |
| 0.2 PMAX to 0.5 PMAX2 | | 3,500 | 0.3 PMAX to 1.0 PMAX | 50 | |
| 0.0 PMAX to 0.6 PMAX | | 300 | 0.5 PMAX to 0.8 PMAX | 1,050 | |
| 0.5 PMAX to 0.8 PMAX | | 600 | 0.0 PMAX to 0.6 PMAX | 50 | |
| 0.3 PMAX to 1.0 PMAX | | 100 | 0.2 PMAX to 0.5 PMAX | 3,350 | |
| NOTES: 1. Each cycle shall have minimum duration of 1 second and a maximum duration of 3 seconds and must be performed in a continuous manner 1. 2. PMAX = 0.6 x ultimate design load in accordance with [ASCE 7.](javascript:vo();) The pressure spectrum shall be applied to each test specimen beginning with inward acting pressures followed by the outward acting pressures in the order from the top of each column to the bottom of each column. | | | |

**Chapter 17 – Structural Tests and Special Inspection**

***Section 1702 – Definitions. Change Section 1702 to add or revise the following terms as shown:***

**GARAGE DOOR MANUFACTURER**

**SPECIAL INSPECTION.** Reserved.

**Continuous special inspection.** Reserved.

**Periodic special inspection.** Reserved.

**SPECIAL INSPECTOR.** Reserved.

**STRUCTURAL OBSERVATION.** Reserved.

***Section 1703 Approvals. Change Section 1703.6.1 to read as shown:***

**1703.6.1 Follow-up inspection.** ~~The applicant shall provide for~~ *~~special inspections~~* ~~of fabricated items in accordance with~~ [~~Section 1704.2.5.~~](javascript:Next('./icod_ibc_2012_17_par028.htm');) Reserved.

***Change Section 1704 to read as shown:***

**SECTION 1704**

**SPECIAL INSPECTIONS, CONTRACTOR RESPONSIBILITY AND STRUCTURAL OBSERVATIONS**Reserved

**~~1704.1 General.~~** ~~This section provides minimum requirements for special inspections, the statement of special inspections, contractor responsibility and structural observations.~~  **~~1704.2 Special inspections.~~** ~~Where application is made for construction as described in this section, the owner or the~~ *~~registered design professional~~**~~in responsible charge~~* ~~acting as the owner’s agent shall employ one or more~~ *~~approved agencies~~* ~~to perform inspections during construction on the types of work listed under~~ [~~Section 1705~~](javascript:Next('./icod_ibc_2012_17_par039.htm');)~~. These inspections are in addition to the inspections identified in Section 110.~~

**~~Exceptions:~~**

~~1.~~ *~~Special inspections~~* ~~are not required for construction of a minor nature or as warranted~~ ~~by conditions in the jurisdiction as~~ *~~approved~~* ~~by the~~ *~~building official~~*~~.~~

~~2. Unless otherwise required by the~~ *~~building official~~*~~,~~ *~~special inspections~~* ~~are not required~~ ~~for Group U occupancies that are accessory to a residential occupancy including, but not limited to, those listed in~~ [~~Section 312.1.~~](javascript:Next('./icod_ibc_2012_3_par064.htm');)

~~3. Special inspections are not required for portions of structures designed and constructed in accordance with the cold-formed steel light-frame construction provisions of~~ [~~Section 2211.7~~](javascript:Next('./icod_ibc_2012_22_par037.htm');) ~~or the conventional light-frame construction provisions of~~ [~~Section 2308~~](javascript:Next('./icod_ibc_2012_23_par141.htm');)~~.~~

**~~1704.2.1 Special inspector qualifications.~~** ~~The special inspector shall provide written documentation to the building official demonstrating his or her competence and relevant experience or training. Experience or training shall be considered relevant when the documented experience or training is related in complexity to the same type of~~ *~~special inspection~~* ~~activities for projects of similar complexity and material qualities. These qualifications are in addition to qualifications specified in other sections of this code.   
  
The~~ *~~registered design professional in responsible charge~~* ~~and engineers of record involved in the design of the project are permitted to act as the~~ *~~approved agency~~* ~~and their~~  ~~personnel are permitted to act as the special inspector for the work designed by them,~~  ~~provided they qualify as special inspectors.~~

**~~1704.2.2 Access for special inspection.~~** ~~The construction or work for which special inspection is required shall remain accessible and exposed for special inspection purposes until completion of the required special inspections.~~

**~~1704.2.3 Statement of special inspections.~~** ~~The applicant shall submit a statement of~~  *~~special inspections~~* ~~in accordance with Section 107.1 as a condition for permit issuance. This statement shall be in accordance with~~ [~~Section 1704.3.~~](javascript:Next('./icod_ibc_2012_17_par031.htm');)

**~~Exception:~~** ~~A statement of~~ *~~special inspections~~* ~~is not required for portions of structures designed and constructed in accordance with the cold-formed steel light-frame construction provisions of~~ [~~Section 2211.7~~](javascript:Next('./icod_ibc_2012_22_par037.htm');) ~~or the conventional light~~-~~frame construction provisions of~~ [~~Section 2308~~](javascript:Next('./icod_ibc_2012_23_par141.htm');)~~.~~

**~~1704.2.4 Report requirement.~~** ~~Special inspectors shall keep records of inspections. The special inspector shall furnish inspection reports to the~~ *~~building official~~*~~, and to the~~ *~~registered design professional in responsible charge~~*~~. Reports shall indicate that work inspected was or was not completed in conformance to~~ *~~approved construction documents~~*~~. Discrepancies shall be brought to the immediate attention of the contractor for correction. If they are not corrected, the discrepancies shall be brought to the attention of the~~ *~~building official~~* ~~and to the~~ *~~registered design professional~~**~~in responsible charge~~* ~~prior to the completion of that phase of the work. A final report documenting required~~ *~~special inspections~~* ~~and correction of any discrepancies noted in the inspections shall be submitted at a point in time agreed upon prior to the start of work by the applicant and the~~ *~~building official~~*~~.~~

**~~1704.2.5 Inspection of fabricators.~~** ~~Where fabrication of structural load-bearing members and assemblies is being performed on the premises of a fabricator’s shop,~~ *~~special inspection~~* ~~of the fabricated items shall be required by this section and as required elsewhere in this code.~~

**~~1704.2.5.1 Fabrication and implementation procedures.~~**  ~~The special inspector shall verify that the fabricator maintains detailed fabrication and quality control procedures that provide a basis for inspection control of the workmanship and the fabricator’s ability to conform to~~ *~~approved construction documents~~* ~~and referenced standards. The special inspector shall review the procedures for completeness and adequacy relative to the code requirements for the fabricator’s scope of work.~~

**~~Exception:~~** *~~Special inspections~~* ~~as required by~~ [~~Section 1704.2.5~~](javascript:Next('./icod_ibc_2012_17_par028.htm');) ~~shall not be required where the fabricator is~~ *~~approved~~* ~~in accordance with~~ [~~Section 1704.2.5.2.~~](javascript:Next('./icod_ibc_2012_17_par030.htm');)

**~~1704.2.5.2 Fabricator approval.~~** *~~Special inspections~~* ~~required by~~ [~~Section 1705~~](javascript:Next('./icod_ibc_2012_17_par039.htm');) ~~are not required where the work is done on the premises of a fabricator registered and~~ *~~approved~~* ~~to perform such work without~~ *~~special inspection~~*~~. Approval shall be based upon review of the fabricator’s written procedural and quality control manuals and periodic auditing of fabrication practices by an~~ *~~approved special inspection~~* ~~agency. At completion of fabrication, the~~ *~~approved~~* ~~fabricator shall submit a~~ *~~certificate of compliance~~* ~~to the~~ *~~building official~~* ~~stating that the work was performed in accordance with the~~ *~~approved construction documents~~*~~.~~

**~~1704.3 Statement of special inspections.~~** ~~Where~~ *~~special inspection~~* ~~or testing is required by~~ [~~Section 1705~~](javascript:Next('./icod_ibc_2012_17_par039.htm');)~~, the~~ *~~registered design professional~~**~~in responsible charge~~* ~~shall prepare a statement of special inspections in accordance with~~ [~~Section 1704.3.1~~](javascript:Next('./icod_ibc_2012_17_par032.htm');) ~~for submittal by the applicant in accordance with~~ [~~Section 1704.2.3.~~](javascript:Next('./icod_ibc_2012_17_par026.htm');)

**~~Exception:~~** ~~The statement of~~ *~~special inspections~~* ~~is permitted to be prepared by a qualified person~~ *~~approved~~* ~~by the~~ *~~building official~~* ~~for construction not designed by a~~ *~~registered design professional~~*~~.~~

**~~1704.3.1 Content of statement of special inspections.~~** ~~The statement of special inspections shall identify the following:~~

~~1. The materials, systems, components and work required to have~~ *~~special inspection~~* ~~or~~  ~~testing by the~~ *~~building official~~* ~~or by the~~ *~~registered design professional~~* ~~responsible for each portion of the work.~~

~~2. The type and extent of each~~ *~~special inspection~~*~~.~~

~~3. The type and extent of each test.~~

~~4. Additional requirements for~~ *~~special inspection~~* ~~or testing for seismic or wind resistance as specified in~~ [~~Sections 1705.10~~](javascript:Next('./icod_ibc_2012_17_par060.htm');)~~,~~ [~~1705.11~~](javascript:Next('./icod_ibc_2012_17_par064.htm');) ~~and~~ [~~1705.12.~~](javascript:Next('./icod_ibc_2012_17_par074.htm');)

~~5. For each type of~~ *~~special inspection~~*~~, identification as to whether it will be continuous~~ *~~special inspection~~* ~~or periodic~~ *~~special inspection~~*~~.~~

**~~1704.3.2 Seismic requirements in the statement of special inspections.~~** ~~Where~~ [~~Section 1705.11~~](javascript:Next('./icod_ibc_2012_17_par064.htm');) ~~or~~ [~~1705.12~~](javascript:Next('./icod_ibc_2012_17_par074.htm');) ~~specifies special inspection, testing or qualification for seismic resistance, the statement of special inspections shall identify the designated seismic systems and seismic force- resisting systems that are subject to~~ *~~special inspections~~*~~.~~

**~~1704.3.3 Wind requirements in the statement of special inspections.~~** ~~Where~~ [~~Section 1705.10~~](javascript:Next('./icod_ibc_2012_17_par060.htm');) ~~specifies special inspection for wind requirements, the statement of special inspections shall identify the main windforce-resisting systems and wind-resisting components subject to~~ *~~special inspection~~*~~.~~

**~~1704.4 Contractor responsibility.~~** ~~Each contractor responsible for the construction of a main wind- or seismic force-resisting system, designated seismic system or a wind- or seismic-resisting component listed in the statement of special inspections shall submit a written statement of responsibility to the~~ *~~building official~~* ~~and the owner prior to the commencement of work on the system or component. The contractor’s statement of responsibility shall contain acknowledgement of awareness of the special requirements contained in the statement of~~ *~~special inspection~~*~~.~~  **~~1704.5 Structural observations.~~** ~~Where required by the provisions of~~ [~~Section 1704.5.1~~](javascript:Next('./icod_ibc_2012_17_par037.htm');) ~~or~~ [~~1704.5.2~~](javascript:Next('./icod_ibc_2012_17_par038.htm');)~~, the owner shall employ a~~ *~~registered design professional~~* ~~to perform structural observations as defined in~~ [~~Section 1702~~](javascript:Next('./icod_ibc_2012_17_par004.htm');)~~.   
  
Prior to the commencement of observations, the structural observer shall submit to the~~ *~~building official~~* ~~a written statement identifying the frequency and extent of structural observations.   
  
At the conclusion of the work included in the permit, the structural observer shall submit to the~~ *~~building official~~* ~~a written statement that the site visits have been made and identify any reported deficiencies which, to the best of the structural observer’s knowledge, have not been resolved.~~

**~~1704.5.1 Structural observations for seismic resistance.~~** ~~Structural observations shall be provided for those structures assigned to~~ *~~Seismic Design Category~~* ~~D, E or F where one or more of the following conditions exist:~~

~~1. The structure is classified as~~ *~~Risk Category~~* ~~III or IV in accordance with Table 1604.5.~~

~~2. The height of the structure is greater than 75 feet (22 860 mm) above the base.~~

~~3. The structure is assigned to~~ *~~Seismic Design Category~~* ~~E, is classified as~~ *~~Risk Category~~* ~~I or II in accordance with Table 1604.5, and is greater than two~~ *~~stories above~~**~~grade plane~~*~~.~~

~~4. When so designated by the~~ *~~registered design professional~~* ~~responsible for the structural design.~~

~~5. When such observation is specifically required by the~~ *~~building official~~*~~.~~

**~~1704.5.2 Structural observations for wind requirements.~~** ~~Structural observations shall be provided for those structures sited where~~ *~~V~~~~asd~~* ~~as determined in accordance with~~ [~~Section 1609.3.1~~](javascript:Next('./icod_ibc_2012_16_par099.htm');) ~~exceeds 110 mph (49 m/sec), where one or more of the following conditions exist:~~

~~1. The structure is classified as~~ *~~Risk Category~~* ~~III or IV in accordance with Table 1604.5.~~

~~2. The~~ *~~building height~~* ~~of the structure is greater than 75 feet (22 860 mm).~~

~~3. When so designated by the~~ *~~registered design professional~~* ~~responsible for the structural design.~~

~~4. When such observation is specifically required by the~~ *~~building official~~*~~.~~

***Change Section 1705 to read as shown:***

**SECTION 1705**

**REQUIRED VERIFICATION AND INSPECTION**

Reserved

**~~1705.1 General.~~** ~~Verification and inspection of elements of buildings and structures shall be as required by this section.~~

**~~1705.1.1 Special cases.~~** *~~Special inspections~~* ~~shall be required for proposed work that is, in the opinion of the~~ *~~building official~~*~~, unusual in its nature, such as, but not limited to, the following examples:~~

~~1. Construction materials and systems that are alternatives to materials and systems prescribed by this code.~~

~~2. Unusual design applications of materials described in this code.~~

~~3. Materials and systems required to be installed in accordance with additional manufacturer’s instructions that prescribe requirements not contained in this code or in standards referenced by this code.~~

**~~1705.2 Steel construction.~~** ~~The~~ *~~special inspections~~* ~~for steel elements of buildings and structures shall be as required in this section.~~

**~~Exception:~~** *~~Special inspection~~* ~~of the steel fabrication process shall not be required where the fabricator does not perform any welding, thermal cutting or heating operation of any kind as part of the fabrication process. In such cases, the fabricator shall be required to~~  ~~submit a detailed procedure for material control that demonstrates the fabricator’s ability to maintain suitable records and procedures such that, at any time during the fabrication process, the material specification, and grade for the main stress-carrying elements are capable of being determined. Mill test reports shall be identifiable to the main stress-carrying elements when required by the approved construction documents.~~

**~~1705.2.1 Structural steel.~~** ~~Special inspection for structural steel shall be in accordance with the quality assurance inspection requirements of AISC 360.~~

**~~1705.2.2 Steel construction other than structural steel.~~** ~~Special inspection for steel construction other than structural steel shall be in accordance with Table 1705.2.2 and this section.~~

**~~TABLE 1705.2.2~~**

**~~REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL~~**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **~~VERIFICATION AND INSPECTION~~** | | **~~CONTINUOUS~~** | | **~~PERIODIC~~** | **~~REFERENCED STANDARD~~~~a~~** | |
| ~~1. Material verification of cold-formed steel deck:~~ | | | | | | |
| ~~a. Identification markings to conform to ASTM standards specified in the approved construction documents.~~ | | ~~—~~ | | ~~X~~ | ~~Applicable ASTM material standards~~ | |
| ~~b. Manufacturer’s certified test reports.~~ | | ~~—~~ | | ~~X~~ |  | |
| ~~2. Inspection of welding:~~ | | | | | | |
| ~~a. Cold-formed steel deck:~~ | | | | | | |
| ~~1) Floor and roof deck welds.~~ | | ~~—~~ | | ~~X~~ | ~~AWS D1.3~~ | |
| ~~b. Reinforcing steel:~~ | |  | |  |  | |
| ~~1) Verification of weldability of reinforcing steel other than ASTM A 706.~~ | | ~~—~~ | | ~~X~~ | ~~AWS D1.4  ACI 318:  Section 3.5.2~~ | |
| ~~2) Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special structural walls of concrete and shear reinforcement.~~ | | ~~X~~ | ~~—~~ |  |
| ~~3) Shear reinforcement.~~ | | ~~X~~ | ~~—~~ |  |
| ~~4) Other reinforcing steel.~~ | | ~~—~~ | ~~X~~ |  |
| ~~For SI: 1 inch = 25.4 mm.~~ | | | | |
| ~~a. Where applicable, see also~~ [~~Section 1705.11~~](javascript:Next('./icod_ibc_2012_17_par064.htm');)~~, Special inspections for seismic resistance.~~ | | | | |

**~~1705.2.2.1 Welding.~~** ~~Welding inspection and welding inspector qualification shall be in accordance with this section.~~

**~~1705.2.2.1.1 Cold-formed steel.~~** ~~Welding inspection and welding inspector qualification for cold-formed steel floor and roof decks shall be in accordance with AWS D1.3.~~

**~~1705.2.2.1.2 Reinforcing steel.~~** ~~Welding inspection and welding inspector qualification for reinforcing steel shall be in accordance with AWS D1.4 and ACI 318.~~

**~~1705.2.2.2 Cold-formed steel trusses spanning 60 feet or greater.~~** ~~Where a cold-formed steel truss clear span is 60 feet (18 288 mm) or greater, the special inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the~~ *~~approved~~* ~~truss submittal package.~~

**~~1705.3 Concrete construction.~~** ~~The~~ *~~special inspections~~* ~~and verifications for concrete construction shall be as required by this section and Table 1705.3.~~

**~~Exception:~~** *~~Special inspections~~* ~~shall not be required for:~~

~~1. Isolated spread concrete footings of buildings three stories or less above~~ *~~grade plane~~* ~~that are fully supported on earth or rock.~~

~~2. Continuous concrete footings supporting walls of buildings three stories or less above~~  *~~grade plane~~* ~~that are fully supported on earth or rock where:~~

~~2.1. The footings support walls of light-frame construction;~~

~~2.2. The footings are designed in accordance with Table 1809.7; or~~

~~2.3. The structural design of the footing is based on a specified compressive strength,~~ *~~f~~* ~~'~~*~~c~~*~~, no greater than 2,500 pounds per square inch (psi) (17.2 MPa), regardless of the compressive strength specified in the~~ *~~construction documents~~* ~~or used in the footing construction.~~

~~3. Nonstructural concrete slabs supported directly on the ground, including prestressed~~  ~~slabs on grade, where the effective prestress in the concrete is less than 150 psi (1.03 MPa).~~

~~4. Concrete foundation walls constructed in accordance with Table 1807.1.6.2.~~

~~5. Concrete patios, driveways and sidewalks, on grade.~~

**~~TABLE 1705.3~~**

**~~REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION~~**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **~~VERIFICATION AND  INSPECTION~~** | | **~~CONTINUOUS~~** | **~~PERIODIC~~** | **~~REFERENCED  STANDARD~~~~a~~** | **~~IBC  REFERENCE~~** | |
| ~~1. Inspection of reinforcing steel, including prestressing tendons, and placement.~~ | | ~~—~~ | ~~X~~ | ~~ACI 318: 3.5, 7.1-7.7~~ | ~~1910.4~~ | |
| ~~2. Inspection of reinforcing steel welding in accordance with Table 1705.2.2, Item 2b.~~ | | ~~—~~ | ~~—~~ | ~~AWS D1.4  ACI 318: 3.5.2~~ | ~~—~~ | |
| ~~3. Inspection of anchors cast in concrete where allowable loads have been increased or where strength design is used.~~ | | ~~—~~ | ~~X~~ | ~~ACI 318:  8.1.3, 21.2.8~~ | ~~1908.5,  1909.1~~ | |
| ~~4. Inspection of anchors post-installed in hardened concrete members~~~~b~~~~.~~ | | ~~—~~ | ~~X~~ | ~~ACI 318:  3.8.6, 8.1.3, 21.2.8~~ | ~~1909.1~~ | |
| ~~5. Verifying use of required design mix.~~ | | ~~—~~ | ~~X~~ | ~~ACI 318: Ch. 4, 5.2-5.4~~ | ~~1904.2, 1910.2, 1910.3~~ | |
| ~~6. At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.~~ | | ~~X~~ | ~~—~~ | ~~ASTM C 172  ASTM C 31  ACI 318: 5.6, 5.8~~ | ~~1910.10~~ | |
| ~~7. Inspection of concrete and shotcrete placement for proper application techniques.~~ | | ~~X~~ | ~~—~~ | ~~ACI 318: 5.9, 5.10~~ | ~~1910.6, 1910.7, 1910.8~~ | |
| ~~8. Inspection for maintenance of specified curing temperature and techniques.~~ | | ~~—~~ | ~~X~~ | ~~ACI 318: 5.11-5.13~~ | ~~1910.9~~ | |
| ~~9. Inspection of prestressed concrete:~~ | |  |  |  |  | |
| ~~a.Application of prestressing forces.  b.Grouting of bonded prestressing ten-dons in the seismic force-resisting system.~~ | | ~~X X~~ | ~~—~~ | ~~ACI 318: 18.20 ACI 318: 18.18.4~~ | ~~—~~ | |
| ~~10. Erection of precast concrete members.~~ | | ~~—~~ | ~~X~~ | ~~ACI 318: Ch. 16~~ | ~~—~~ | |
| ~~11. Verification of in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.~~ | | ~~—~~ | ~~X~~ | ~~ACI 318: 6.2~~ | ~~—~~ | |
| ~~12. Inspect formwork for shape, location and dimensions of the concrete member being formed.~~ | | ~~—~~ | ~~X~~ | ~~ACI 318: 6.1.1~~ | ~~—~~ | |
| ~~For SI: 1 inch = 25.4 mm.~~ | | | | |
| ~~a. Where applicable, see also~~ [~~Section 1705.11~~](javascript:Next('./icod_ibc_2012_17_par064.htm');)~~, Special inspections for seismic resistance.~~ | | | | |
| ~~b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with ACI 355.2 or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work.~~ | | | | |

**~~1705.3.1 Materials.~~** ~~In the absence of sufficient data or documentation providing evidence of conformance to quality standards for materials in Chapter 3 of ACI 318, the building official shall require testing of materials in accordance with the appropriate standards and criteria for the material in Chapter 3 of ACI 318. Weldability of reinforcement, except that which conforms to ASTM A 706, shall be determined in accordance with the requirements of Section 3.5.2 of ACI 318.~~

**~~1705.4 Masonry construction.~~** ~~Masonry construction shall be inspected and verified in accordance with TMS 402/ACI 530/ASCE 5 and TMS 602/ACI 530.1/ASCE 6 quality assurance program requirements.~~

**~~Exception:~~** *~~Special inspections~~* ~~shall not be required for:~~

~~1. Empirically designed masonry, glass unit masonry or masonry veneer designed by~~ [~~Section 2109~~](javascript:Next('./icod_ibc_2012_21_par069.htm');)~~,~~ [~~2110~~](javascript:Next('./icod_ibc_2012_21_par105.htm');) ~~or~~ [~~Chapter 14~~](javascript:Next('./icod_ibc_2012_14_par001.htm');)~~, respectively, where they are part of structures classified as~~ *~~Risk Category~~* ~~I, II or III in accordance with~~ [~~Section 1604.5.~~](javascript:Next('./icod_ibc_2012_16_par023.htm');)

~~2. Masonry foundation walls constructed in accordance with Table 1807.1.6.3(1),~~  ~~1807.1.6.3(2), 1807.1.6.3(3) or 1807.1.6.3(4).~~

~~3. Masonry fireplaces, masonry heaters or masonry chimneys installed or constructed in accordance with~~ [~~Section 2111~~](javascript:Next('./icod_ibc_2012_21_par107.htm');)~~,~~ [~~2112~~](javascript:Next('./icod_ibc_2012_21_par135.htm');) ~~or~~ [~~2113~~](javascript:Next('./icod_ibc_2012_21_par140.htm');)~~, respectively.~~

**~~1705.4.1 Empirically designed masonry, glass unit masonry and masonry veneer in Risk Category IV.~~** ~~The minimum~~ *~~special inspection~~* ~~program for empirically designed~~  ~~masonry, glass unit masonry or masonry veneer designed by~~ [~~Section 2109~~](javascript:Next('./icod_ibc_2012_21_par069.htm');)~~,~~ [~~2110~~](javascript:Next('./icod_ibc_2012_21_par105.htm');) ~~or~~ [~~Chapter 14~~](javascript:Next('./icod_ibc_2012_14_par001.htm');)~~, respectively, in structures classified as~~ *~~Risk Category~~* ~~IV, in accordance with~~ [~~Section 1604.5~~](javascript:Next('./icod_ibc_2012_16_par023.htm');)~~, shall comply with TMS 402/ACI 530/ASCE 5 Level B Quality Assurance.~~

**~~1705.4.2 Vertical masonry foundation elements.~~** *~~Special inspection~~* ~~shall be performed in accordance with~~ [~~Section 1705.4~~](javascript:Next('./icod_ibc_2012_17_par050.htm');) ~~for vertical masonry foundation elements.~~

**~~1705.5 Wood construction.~~** *~~Special inspections~~* ~~of the fabrication process of prefabricated wood structural elements and assemblies shall be in accordance with~~ [~~Section 1704.2.5.~~](javascript:Next('./icod_ibc_2012_17_par028.htm');)*~~Special inspections~~* ~~of site-built assemblies shall be in accordance with this section.~~

**~~1705.5.1 High-load diaphragms.~~** ~~High-load diaphragms designed in accordance with~~ [~~Section 2306.2~~](javascript:Next('./icod_ibc_2012_23_par137.htm');) ~~shall be installed with~~ *~~special inspections~~* ~~as indicated in~~ [~~Section 1704.2.~~](javascript:Next('./icod_ibc_2012_17_par023.htm');)~~The special inspector shall inspect the wood structural panel sheathing to ascertain whether it is of the grade and thickness shown on the~~ *~~approved~~* ~~building plans. Additionally, the special inspector must verify the nominal size of framing members at adjoining panel edges, the nail or staple diameter and length, the number of fastener lines and that the spacing between fasteners in each line and at edge margins agrees with the~~  *~~approved~~* ~~building plans.~~

**~~1705.5.2 Metal-plate-connected wood trusses spanning 60 feet or greater.~~** ~~Where a truss clear span is 60 feet (18 288 mm) or greater, the special inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the~~ *~~approved~~* ~~truss submittal package.~~

**~~1705.6 Soils.~~** *~~Special inspections~~* ~~for existing site soil conditions, fill placement and load-bearing requirements shall be as required by this section and Table 1705.6. The~~ *~~approved~~* ~~geotechnical report, and the~~ *~~construction documents~~* ~~prepared by the~~ *~~registered design professionals~~* ~~shall be used to determine compliance. During fill placement, the special inspector shall determine that proper materials and procedures are used in accordance with the provisions of the~~ *~~approved~~* ~~geotechnical report.~~

**~~Exception:~~** ~~Where~~ [~~Section 1803~~](javascript:Next('./icod_ibc_2012_18_par004.htm');) ~~does not require reporting of materials and procedures for fill placement, the special inspector shall verify that the in-place dry density of the compacted fill is not less than 90 percent of the maximum dry density at optimum moisture content determined in accordance with ASTM D 1557.~~

**~~1705.7 Driven deep foundations.~~** *~~Special inspections~~* ~~shall be performed during installation and testing of driven deep foundation elements as required by Table 1705.7. The~~ *~~approved instruction documents~~* ~~prepared by the~~ *~~registered design professionals~~*~~, shall be used to determine compliance.~~

**~~TABLE 1705.6~~**

**~~REQUIRED VERIFICATION AND INSPECTION OF SOILS~~**

|  |  |  |
| --- | --- | --- |
| **~~VERIFICATION AND INSPECTION  TASK~~** | **~~CONTINUOUS DURING TASK LISTED~~** | **~~PERIODICALLY DURING TASK LISTED~~** |
| ~~1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.~~ | ~~—~~ | ~~X~~ |
| ~~2. Verify excavations are extended to proper depth and have reached proper material.~~ | ~~—~~ | ~~X~~ |
| ~~3. Perform classification and testing of compacted fill materials.~~ | ~~—~~ | ~~X~~ |
| ~~4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.~~ | ~~X~~ | ~~—~~ |
| ~~5. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly.~~ | ~~—~~ | ~~X~~ |

**~~TABLE 1705.7~~**

**~~REQUIRED VERIFICATION AND INSPECTION OF DRIVEN DEEP FOUNDATION ELEMENTS~~**

|  |  |  |
| --- | --- | --- |
| **~~VERIFICATION AND INSPECTION TASK~~** | **~~CONTINUOUS DURING TASK LISTED~~** | **~~PERIODICALLY DURING TASK LISTED~~** |
| ~~1. Verify element materials, sizes and lengths comply with the requirements.~~ | ~~X~~ | ~~—~~ |
| ~~2. Determine capacities of test elements and conduct additional load tests, as required.~~ | ~~X~~ | ~~—~~ |
| ~~3. Observe driving operations and maintain complete and accurate records for each element.~~ | ~~X~~ | ~~—~~ |
| ~~4. Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element.~~ | ~~X~~ | ~~—~~ |
| ~~5. For steel elements, perform additional inspections in accordance with~~ [~~Section 1705.2~~](javascript:Next('./icod_ibc_2012_17_par041.htm');) ~~.~~ | ~~—~~ | ~~—~~ |
| ~~6. For concrete elements and concrete-filled elements, perform additional inspections in accordance with~~ [~~Section 1705.3~~](javascript:Next('./icod_ibc_2012_17_par048.htm');) ~~.~~ | ~~—~~ | ~~—~~ |
| ~~7. For specialty elements, perform additional inspections as determined by the registered design professional in responsible charge.~~ | ~~—~~ | ~~—~~ |

**~~1705.8 Cast-in-place deep foundations.~~** *~~Special inspections~~* ~~shall be performed during installation and testing of cast-in-place deep foundation elements as required by Table 1705.8. The~~ *~~approved~~* ~~geotechnical report, and the~~ *~~construction documents~~* ~~prepared by the~~ *~~registered design professionals~~*~~, shall be used to determine compliance.~~

**~~TABLE 1705.8~~**

**~~REQUIRED VERIFICATION AND INSPECTION OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS~~**

|  |  |  |
| --- | --- | --- |
| **~~VERIFICATION AND INSPECTION TASK~~** | **~~CONTINUOUS DURING TASK LISTED~~** | **~~PERIODICALLY DURING TASK LISTED~~** |
| ~~1. Observe drilling operations and maintain complete and accurate records for each element.~~ | ~~X~~ | ~~—~~ |
| ~~2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes.~~ | ~~X~~ | ~~—~~ |
| ~~3. For concrete elements, perform additional inspections in accordance with~~ [~~Section 1705.3~~](javascript:Next('./icod_ibc_2012_17_par048.htm');) ~~.~~ | ~~—~~ | ~~—~~ |

**~~1705.9 Helical pile foundations.~~** *~~Special inspections~~* ~~shall be performed continuously during installation of helical pile foundations. The information recorded shall include installation equipment used, pile dimensions, tip elevations, final depth, final installation torque and other pertinent installation data as required by the~~ *~~registered design professional~~**~~in responsible charge~~*~~. The~~ *~~approved~~* ~~geotechnical report and the~~ *~~construction documents~~* ~~prepared by the~~ *~~registered design professional~~* ~~shall be used to determine compliance.~~

**~~1705.10 Special inspections for wind resistance.~~** *~~Special inspections~~* ~~itemized in~~ [~~Sections 1705.10.1~~](javascript:Next('./icod_ibc_2012_17_par061.htm');) ~~through~~ [~~1705.10.3~~](javascript:Next('./icod_ibc_2012_17_par063.htm');)~~, unless exempted by the exceptions to~~ [~~Section 1704.2~~](javascript:Next('./icod_ibc_2012_17_par023.htm');)~~, are required for buildings and structures constructed in the following areas:~~

~~1. In wind Exposure Category B, where~~ *~~V~~~~asd~~* ~~as determined in accordance with~~ [~~Section 1609.3.1~~](javascript:Next('./icod_ibc_2012_16_par099.htm');) ~~is 120 miles per hour (52.8 m/sec) or greater.~~

~~2. In wind Exposure Category C or D, where~~ *~~V~~~~asd~~* ~~as determined in accordance with~~ [~~Section 1609.3.1~~](javascript:Next('./icod_ibc_2012_16_par099.htm');) ~~is 110 mph (49 m/sec) or greater.~~

**~~1705.10.1 Structural wood.~~** ~~Continuous special inspection is required during field gluing operations of elements of the main windforce-resisting system. Periodic special inspection is required for nailing, bolting, anchoring and other fastening of components within the main windforce-resisting system, including wood shear walls, wood diaphragms, drag struts, braces and hold-downs.~~

**~~Exception:~~** *~~Special inspection~~* ~~is not required for wood shear walls, shear panels and diaphragms, including nailing, bolting, anchoring and other fastening to other components of the main windforce-resisting system, where the fastener spacing of the sheathing is more than 4 inches (102 mm) on center.~~

**~~1705.10.2 Cold-formed steel light-frame construction.~~** ~~Periodic special inspection is required during welding operations of elements of the main windforce-resisting system. Periodic special inspection is required for screw attachment, bolting, anchoring and other fastening of components within the main windforce-resisting system, including shear walls, braces, diaphragms, collectors (drag struts) and hold-downs.~~

**~~Exception:~~** *~~Special inspection~~* ~~is not required for cold-formed steel light-frame shear walls, braces, diaphragms, collectors (drag struts) and hold-downs where either of the following apply:~~

~~1. The sheathing is gypsum board or fiberboard.~~

~~2. The sheathing is wood structural panel or steel sheets on only one side of the shear wall, shear panel or diaphragm assembly and the fastener spacing of the sheathing is more than 4 inches (102 mm) on center (o.c.).~~

**~~1705.10.3 Wind-resisting components.~~** ~~Periodic special inspection is required for the following systems and components:~~

~~1. Roof cladding.~~

~~2. Wall cladding.~~

**~~1705.11 Special inspections for seismic resistance.~~** *~~Special inspections~~* ~~itemized in~~ [~~Sections 1705.11.1~~](javascript:Next('./icod_ibc_2012_17_par065.htm');) ~~through~~ [~~1705.11.8~~](javascript:Next('./icod_ibc_2012_17_par073.htm');)~~, unless exempted by the exceptions of~~ [~~Section 1704.2~~](javascript:Next('./icod_ibc_2012_17_par023.htm');)~~, are required for the following:~~

~~1. The seismic force-resisting systems in structures assigned to~~ *~~Seismic Design Category~~* ~~C, D, E or F in accordance with~~ [~~Sections 1705.11.1~~](javascript:Next('./icod_ibc_2012_17_par065.htm');) ~~through~~ [~~1705.11.3~~](javascript:Next('./icod_ibc_2012_17_par067.htm');)~~, as applicable.~~

~~2. Designated seismic systems in structures assigned to~~ *~~Seismic Design Category~~* ~~C, D, E~~  ~~or F in accordance with~~ [~~Section 1705.11.4.~~](javascript:Next('./icod_ibc_2012_17_par068.htm');)

~~3. Architectural, mechanical and electrical components in accordance with~~ [~~Sections 1705.11.5~~](javascript:Next('./icod_ibc_2012_17_par069.htm');) ~~and~~ [~~1705.11.6.~~](javascript:Next('./icod_ibc_2012_17_par071.htm');)

~~4. Storage racks in structures assigned to~~ *~~Seismic Design Category~~* ~~D, E or F in accordance with~~ [~~Section 1705.11.7.~~](javascript:Next('./icod_ibc_2012_17_par072.htm');)

~~5. Seismic isolation systems in accordance with~~ [~~Section 1705.11.8.~~](javascript:Next('./icod_ibc_2012_17_par073.htm');)

**~~Exception:~~** ~~Special inspections itemized in~~ [~~Sections 1705.11.1~~](javascript:Next('./icod_ibc_2012_17_par065.htm');) ~~through~~ [~~1705.11.8~~](javascript:Next('./icod_ibc_2012_17_par073.htm');) ~~are not required for structures designed and constructed in accordance with one of the following:~~

~~1. The structure consists of light-frame construction; the design spectral response~~  ~~acceleration at short periods,~~ *~~S~~~~DS~~*~~, as determined in~~ [~~Section 1613.3.4~~](javascript:Next('./icod_ibc_2012_16_par133.htm');)~~, does not exceed 0.5; and the building height of the structure does not exceed 35 feet (10 668 mm).~~

~~2. The seismic force-resisting system of the structure consists of reinforced masonry or reinforced concrete; the design spectral response acceleration at short periods,~~ *~~S~~~~DS~~*~~, as determined in~~ [~~Section 1613.3.4~~](javascript:Next('./icod_ibc_2012_16_par133.htm');)~~, does not exceed 0.5; and the building height of the structure does not exceed 25 feet (7620 mm).~~

~~3. The structure is a detached one- or two-family dwelling not exceeding two~~ *~~stories above grade plane~~* ~~and does not have any of the following horizontal or vertical~~  ~~irregularities in accordance with Section 12.3 of ASCE 7:~~

~~3.1. Torsional or extreme torsional irregularity.~~

~~3.2. Nonparallel systems irregularity.~~

~~3.3. Stiffness-soft story or stiffness-extreme soft story irregularity.~~

~~3.4. Discontinuity in lateral strength-weak story irregularity.~~

**~~1705.11.1 Structural steel.~~** *~~Special inspection~~* ~~for structural steel shall be in accordance with the quality assurance requirements of AISC 341.~~

**~~Exception:~~** *~~Special inspections~~* ~~of structural steel in structures assigned to~~ *~~Seismic Design Category~~* ~~C that are not specifically detailed for seismic resistance, with a response modification coefficient,~~ *~~R~~*~~, of 3 or less, excluding cantilever column systems.~~

**~~1705.11.2 Structural wood.~~** ~~Continuous special inspection is required during field gluing operations of elements of the seismic force-resisting system. Periodic special inspection force-resisting system, including wood shear walls, wood diaphragms, drag struts, braces, shear panels and hold-downs.~~

**~~Exception:~~** *~~Special inspection~~* ~~is not required for wood shear walls, shear panels and diaphragms, including nailing, bolting, anchoring and other fastening to other components of the seismic force-resisting system, where the fastener spacing of the sheathing is more than 4 inches (102 mm) on center (o.c.).~~

**~~1705.11.3 Cold-formed steel light-frame construction.~~** ~~Periodic special inspection is required during welding operations of elements of the seismic force-resisting system. Periodic special inspection is required for screw attachment, bolting, anchoring and other fastening of components within the seismic force-resisting system, including shear walls, braces, diaphragms, collectors (drag struts) and hold-downs.~~

**~~Exception:~~** *~~Special inspection~~* ~~is not required for cold-formed steel light-frame shear walls, braces, diaphragms, collectors (drag struts) and hold-downs where either of the following apply:~~

~~1. The sheathing is gypsum board or fiberboard.~~

~~2. The sheathing is wood structural panel or steel sheets on only one side of the shear wall, shear panel or diaphragm assembly and the fastener spacing of the sheathing is more than 4 inches (102 mm) o.c.~~

**~~1705.11.4 Designated seismic systems.~~** ~~The special inspector shall examine designated seismic systems requiring seismic qualification in accordance with~~ [~~Section 1705.12.3~~](javascript:Next('./icod_ibc_2012_17_par077.htm');) ~~and~~  ~~verify that the~~ *~~label~~*~~, anchorage or mounting conforms to the~~ *~~certificate of compliance~~*~~.~~

**~~1705.11.5 Architectural components.~~** ~~Periodic~~ *~~special inspection~~* ~~is required during the erection and fastening of exterior cladding, interior and exterior nonbearing walls and interior and exterior veneer in structures assigned to~~ *~~Seismic Design Category~~* ~~D, E or F.~~

**~~Exceptions:~~**

~~1.~~ *~~Special inspection~~* ~~is not required for exterior cladding, interior and exterior nonbearing walls and interior and exterior veneer 30 feet (9144 mm) or less in height above grade or walking surface.~~

~~2.~~ *~~Special inspection~~* ~~is not required for exterior cladding and interior and exterior veneer weighing 5 psf (24.5 N/m~~~~2~~~~) or less.~~

~~3.~~ *~~Special inspection~~* ~~is not required for interior nonbearing walls weighing 15 psf (73.5 N/m~~~~2~~~~) or less.~~

**~~1705.11.5.1 Access floors.~~** ~~Periodic~~ *~~special inspection~~* ~~is required for the anchorage of access floors in structures assigned to~~ *~~Seismic Design Category~~* ~~D, E or F.~~

**~~1705.11.6 Mechanical and electrical components.~~** *~~Special inspection~~* ~~for mechanical and electrical components shall be as follows:~~

~~1. Periodic special inspection is required during the anchorage of electrical equipment for emergency or standby power systems in structures assigned to~~ *~~Seismic Design Category~~* ~~C, D, E or F;~~

~~2. Periodic special inspection is required during the anchorage of other electrical equipment in structures assigned to~~ *~~Seismic Design Category~~* ~~E or F;~~

~~3. Periodic special inspection is required during the installation and anchorage of piping systems designed to carry hazardous materials and their associated mechanical units in structures assigned to~~ *~~Seismic Design Category~~* ~~C, D, E or F;~~

~~4. Periodic special inspection is required during the installation and anchorage of ductwork designed to carry hazardous materials in structures assigned to~~ *~~Seismic Design Category~~* ~~C, D, E or F; and~~

~~5. Periodic special inspection is required during the installation and anchorage of~~  ~~vibration isolation systems in structures assigned to~~ *~~Seismic Design Category~~* ~~C, D, E or F where the~~ *~~construction documents~~* ~~require a nominal clearance of~~ ~~1~~~~/~~~~4~~ ~~inch (6.4 mm) or less between the equipment support frame and restraint.~~

**~~1705.11.7 Storage racks.~~** ~~Periodic~~ *~~special inspection~~* ~~is required during the anchorage of storage racks 8 feet (2438 mm) or greater in height in structures assigned to~~ *~~Seismic Design Category~~* ~~D, E or F.~~

**~~1705.11.8 Seismic isolation systems.~~** ~~Periodic special inspection shall be provided for seismic isolation systems during the fabrication and installation of isolator units and energy dissipation devices.~~

**~~1705.12 Testing and qualification for seismic resistance.~~** ~~The testing and qualification specified in~~ [~~Sections 1705.12.1~~](javascript:Next('./icod_ibc_2012_17_par075.htm');) ~~through~~ [~~1705.12.4~~](javascript:Next('./icod_ibc_2012_17_par078.htm');)~~, unless exempted from~~ *~~special inspections~~* ~~by the exceptions of~~ [~~Section 1704.2~~](javascript:Next('./icod_ibc_2012_17_par023.htm');) ~~are required as follows:~~

~~1. The seismic force-resisting systems in structures assigned to~~ *~~Seismic Design Category~~* ~~C, D, E or F shall meet the requirements of~~ [~~Sections 1705.12.1~~](javascript:Next('./icod_ibc_2012_17_par075.htm');) ~~and~~ [~~1705.12.2~~](javascript:Next('./icod_ibc_2012_17_par076.htm');)~~, as applicable.~~

~~2. Designated seismic systems in structures assigned to~~ *~~Seismic Design Category~~* ~~C, D, E or F and subject to the certification requirements of ASCE 7 Section 13.2.2 shall comply with~~ [~~Section 1705.12.3.~~](javascript:Next('./icod_ibc_2012_17_par077.htm');)

~~3. Architectural, mechanical and electrical components in structures assigned to~~ *~~Seismic Design Category~~* ~~C, D, E or F and where the requirements of ASCE 7 Section 13.2.1 are met by submittal of manufacturer’s certification, in accordance with Item 2 therein, shall~~  ~~comply with~~ [~~Section 1705.12.3.~~](javascript:Next('./icod_ibc_2012_17_par077.htm');)

~~4. The seismic isolation system in seismically isolated structures shall meet the testing requirements of~~ [~~Section 1705.12.4.~~](javascript:Next('./icod_ibc_2012_17_par078.htm');)

**~~1705.12.1 Concrete reinforcement.~~** ~~Where reinforcement complying with ASTM A 615 is used to resist earthquake-induced flexural and axial forces in special moment frames, special structural walls and coupling beams connecting special structural walls, in structures assigned to~~ *~~Seismic Design Category~~* ~~B, C, D, E or F, the reinforcement shall comply with Section 21.1.5.2 of ACI 318. Certified mill test reports shall be provided for each shipment of such reinforcement. Where reinforcement complying with ASTM A 615 is to be welded, chemical tests shall be performed to determine weldability in accordance with Section 3.5.2 of ACI 318.~~

**~~1705.12.2 Structural steel.~~** ~~Testing for structural steel shall be in accordance with the quality assurance requirements of AISC 341.~~

**~~Exception:~~** ~~Testing for structural steel in structures assigned to~~ *~~Seismic Design Category~~* ~~C that are not specifically detailed for seismic resistance, with a response modification coefficient,~~ *~~R~~*~~, of 3 or less, excluding cantilever column systems.~~

**~~1705.12.3 Seismic certification of nonstructural components.~~** ~~The~~ *~~registered design professional~~* ~~shall specify on the construction documents the requirements for certification by analysis, testing or experience data for nonstructural components and designated seismic systems in accordance with Section 13.2 of ASCE 7, where such certification is required by~~ [~~Section 1705.12.~~](javascript:Next('./icod_ibc_2012_17_par074.htm');)

**~~1705.12.4 Seismic isolation systems.~~** ~~Seismic isolation systems shall be tested in accordance with Section 17.8 of ASCE 7.~~

**~~1705.13 Sprayed fire-resistant materials.~~** *~~Special inspections~~* ~~for sprayed fire-resistant materials applied to floor, roof and wall assemblies and structural members shall be in accordance with~~ [~~Sections 1705.13.1~~](javascript:Next('./icod_ibc_2012_17_par080.htm');) ~~through~~ [~~1705.13.6.~~](javascript:Next('./icod_ibc_2012_17_par094.htm');)*~~Special inspections~~* ~~shall be based on the fire-resistance design as designated in the~~ *~~approved construction documents~~*~~. The tests set forth in this section shall be based on samplings from specific floor, roof and wall assemblies and structural members.~~ *~~Special inspections~~* ~~shall be performed after the rough installation of electrical, automatic sprinkler, mechanical and plumbing systems and suspension systems for ceilings, where applicable.~~

**~~1705.13.1 Physical and visual tests.~~** ~~The~~ *~~special inspections~~* ~~shall include the following tests and observations to demonstrate compliance with the listing and the fire-resistance rating:~~

~~1. Condition of substrates.~~

~~2. Thickness of application.~~

~~3. Density in pounds per cubic foot (kg/m~~~~3~~~~).~~

~~4. Bond strength adhesion/cohesion.~~

~~5. Condition of finished application.~~

**~~1705.13.2 Structural member surface conditions.~~** ~~The surfaces shall be prepared in accordance with the~~ *~~approved~~* ~~fire-resistance design and the written instructions of~~ *~~approved~~* ~~manufacturers. The prepared surface of structural members to be sprayed shall be inspected before the application of the sprayed fire-resistant material.~~

**~~1705.13.3 Application.~~** ~~The substrate shall have a minimum ambient temperature before and after application as specified in the written instructions of~~ *~~approved~~* ~~manufacturers. The area for application shall be ventilated during and after application as required by the written instructions of~~ *~~approved~~* ~~manufacturers.~~

**~~1705.13.4 Thickness.~~** ~~No more than 10 percent of the thickness measurements of the sprayed fire-resistant materials applied to floor, roof and wall assemblies and structural members shall be less than the thickness required by the~~ *~~approved~~* ~~fire-resistance design, but in no case less than the minimum allowable thickness required by~~ [~~Section 1705.13.4.1.~~](javascript:Next('./icod_ibc_2012_17_par084.htm');)

**~~1705.13.4.1 Minimum allowable thickness.~~** ~~For design thicknesses 1 inch (25 mm) or greater, the minimum allowable individual thickness shall be the design thickness minus~~ ~~1~~~~/~~~~4~~ ~~inch (6.4 mm). For design thicknesses less than 1 inch (25 mm), the minimum allowable individual thickness shall be the design thickness minus 25 percent. Thickness shall be determined in accordance with ASTM E 605. Samples of the sprayed fire-resistant materials shall be selected in accordance with~~ [~~Sections 1705.13.4.2~~](javascript:Next('./icod_ibc_2012_17_par085.htm');) ~~and~~ [~~1705.13.4.3.~~](javascript:Next('./icod_ibc_2012_17_par086.htm');)

**~~1705.13.4.2 Floor, roof and wall assemblies.~~** ~~The thickness of the sprayed fire~~ ~~resistant material applied to floor, roof and wall assemblies shall be determined in~~  ~~accordance with ASTM E 605, making not less than four measurements for each~~ ~~1,000 square feet (93 m~~~~2~~~~) of the sprayed area, or portion thereof, in each~~ *~~story~~*~~.~~

**~~1705.13.4.3 Cellular decks.~~** ~~Thickness measurements shall be selected from a~~ ~~square area, 12 inches by 12 inches (305 mm by 305 mm) in size. A minimum of~~  ~~four measurements shall be made, located symmetrically within the square area.~~

**~~1705.13.4.4 Fluted decks.~~** ~~Thickness measurements shall be selected from a~~ ~~square area, 12 inches by 12 inches (305 mm by 305 mm) in size. A minimum of~~ ~~four measurements shall be made, located symmetrically within the square area,~~ ~~including one each of the following: valley, crest and sides. The average of the~~ ~~measurements shall be reported.~~

**~~1705.13.4.5 Structural members.~~** ~~The thickness of the sprayed fire-resistant~~  ~~material applied to structural members shall be determined in accordance with~~ ~~ASTM E 605. Thickness testing shall be performed on not less than 25 percent of~~  ~~the structural members on each floor.~~

**~~1705.13.4.6 Beams and girders.~~** ~~At beams and girders thickness measurements~~ ~~shall be made at nine locations around the beam or girder at each end of a 12-inch~~ ~~(305 mm) length.~~

**~~1705.13.4.7 Joists and trusses.~~** ~~At joists and trusses, thickness measurements~~ ~~shall be made at seven locations around the joist or truss at each end of a 12-inch~~ ~~(305 mm) length.~~

**~~1705.13.4.8 Wide-flanged columns.~~** ~~At wide- flanged columns, thickness~~ ~~measurements shall be made at 12 locations around the column at each end of a~~ ~~12-inch (305 mm) length.~~

**~~1705.13.4.9 Hollow structural section and pipe columns.~~** ~~At hollow structural~~ ~~section and pipe columns, thickness measurements shall be made at a minimum of~~  ~~four locations around the column at each end of a 12-inch (305 mm) length.~~

**~~1705.13.5 Density.~~** ~~The density of the sprayed fire-resistant material shall not be less than the density specified in the~~ *~~approved~~* ~~fire-resistance design. Density of the sprayed fire-resistant material shall be determined in accordance with ASTM E 605. The test samples for determining the density of the sprayed fire-resistant materials shall be selected as follows:~~

~~1. From each floor, roof and wall assembly at the rate of not less than one sample~~ ~~for every 2,500 square feet (232 m~~~~2~~~~) or portion thereof of the sprayed area in each~~  *~~story~~*~~.~~

~~2. From beams, girders, trusses and columns at the rate of not less than one~~  ~~sample for each type of structural member for each 2,500 square feet (232 m~~~~2~~~~) of~~  ~~floor area or portion thereof in each~~ *~~story~~*~~.~~

**~~1705.13.6 Bond strength.~~** ~~The cohesive/adhesive bond strength of the cured sprayed fire-resistant material applied to floor, roof and wall assemblies and structural members shall not be less than 150 pounds per square foot (psf) (7.18 kN/m~~~~2~~~~). The cohesive/adhesive bond strength shall be determined in accordance with the field test specified in ASTM E 736 by testing in-place samples of the sprayed fire-resistant material selected in accordance with~~ [~~Sections 1705.13.6.1~~](javascript:Next('./icod_ibc_2012_17_par095.htm');) ~~through~~ [~~1705.13.6.3.~~](javascript:Next('./icod_ibc_2012_17_par097.htm');)

**~~1705.13.6.1 Floor, roof and wall assemblies.~~** ~~The test samples for determining~~  ~~the cohesive/adhesive bond strength of the sprayed fire-resistant materials shall be selected from each floor, roof and wall assembly at the rate of not less than one sample for every 2,500 square feet (232 m~~~~2~~~~) of the sprayed area, or portion thereof, in each~~ *~~story~~*~~.~~

**~~1705.13.6.2 Structural members.~~** ~~The test samples for determining the~~  ~~cohesive/adhesive bond strength of the sprayed fire-resistant materials shall be~~  ~~selected from beams, girders, trusses, columns and other structural members at the~~  ~~rate of not less than one sample for each type of structural member for each 2,500~~  ~~square feet (232 m~~~~2~~~~) of floor area or portion thereof in each~~ *~~story~~*~~.~~

**~~1705.13.6.3 Primer, paint and encapsulant bond tests.~~** ~~Bond tests to qualify a~~  ~~primer, paint or encapsulant shall be conducted when the sprayed fire-resistant~~  ~~material is applied to a primed, painted or encapsulated surface for which~~  ~~acceptable bond-strength performance between these coatings and the fire-~~  ~~resistant material has not been determined. A bonding agent~~ *~~approved~~* ~~by the~~  ~~SFRM manufacturer shall be applied to a primed, painted or encapsulated surface~~  ~~where the bond strengths are found to be less than required values.~~

**~~1705.14 Mastic and intumescent fire-resistant coatings.~~** *~~Special inspections~~* ~~for mastic and intumescent fire-resistant coatings applied to structural elements and decks shall be in accordance with AWCI 12-B.~~ *~~Special inspections~~* ~~shall be based on the fire-resistance design as designated in the~~ *~~approved construction documents~~*~~.~~  **~~1705.15 Exterior insulation and finish systems (EIFS).~~** *~~Special inspections~~* ~~shall be required for all EIFS applications.~~  **~~Exceptions:~~**

~~1.~~ *~~Special inspections~~* ~~shall not be required for EIFS applications installed over a~~ *~~water-~~ ~~resistive barrier~~* ~~with a means of draining moisture to the exterior.~~

~~2.~~ *~~Special inspections~~* ~~shall not be required for EIFS applications installed over masonry~~  ~~or concrete walls.~~

**~~1705.15.1 Water-resistive barrier coating.~~** ~~A~~ *~~water-resistive barrier~~* ~~coating complying~~  ~~with ASTM E 2570 requires~~ *~~special inspection~~* ~~of the~~ *~~water-resistive barrier~~* ~~coating~~  ~~when installed over a sheathing substrate.~~

**~~1705.16 Fire-resistant penetrations and joints.~~** ~~In high-rise buildings or in buildings assigned to~~ *~~Risk Category~~* ~~III or IV in accordance with~~ [~~Section 1604.5~~](javascript:Next('./icod_ibc_2012_16_par023.htm');)~~, special inspections for through-penetrations, membrane penetration firestops, fire-resistant joint systems, and perimeter fire barrier systems that are tested and listed in accordance with~~ [~~Sections 714.3.1.2~~](javascript:Next('./icod_ibc_2012_7_par191.htm');)~~,~~ [~~714.4.1.2~~](javascript:Next('./icod_ibc_2012_7_par199.htm');)~~,~~ [~~715.3~~](javascript:Next('./icod_ibc_2012_7_par208.htm');) ~~and~~ [~~715.4~~](javascript:Next('./icod_ibc_2012_7_par209.htm');) ~~shall be in accordance with~~ [~~Section 1705.16.1~~](javascript:Next('./icod_ibc_2012_17_par102.htm');) ~~or~~ [~~1705.16.2.~~](javascript:Next('./icod_ibc_2012_17_par103.htm');)

**~~1705.16.1 Penetration firestops.~~** ~~Inspections of penetration firestop systems that are~~  ~~tested and listed in accordance with~~ [~~Sections 714.3.1.2~~](javascript:Next('./icod_ibc_2012_7_par191.htm');) ~~and~~ [~~714.4.1.2~~](javascript:Next('./icod_ibc_2012_7_par199.htm');) ~~shall be conducted~~  ~~by an approved inspection agency in accordance with ASTM E 2174.~~

**~~1705.16.2 Fire-resistant joint systems.~~** ~~Inspection of fire-resistant joint systems that are~~  ~~tested and listed in accordance with~~ [~~Sections 715.3~~](javascript:Next('./icod_ibc_2012_7_par208.htm');) ~~and~~ [~~715.4~~](javascript:Next('./icod_ibc_2012_7_par209.htm');) ~~shall be conducted by an~~  ~~approved inspection agency in accordance with ASTM E 2393.~~

**~~1705.17 Special inspection for smoke control.~~** ~~Smoke control systems shall be tested by a special inspector.~~

**~~1705.17.1 Testing scope.~~** ~~The test scope shall be as follows:~~

~~1. During erection of ductwork and prior to concealment for the purposes of leakage~~  ~~testing and recording of device location.~~

~~2. Prior to occupancy and after sufficient completion for the purposes of pressure~~  ~~difference testing, flow measurements and detection and control verification.~~

**~~1705.17.2 Qualifications.~~** *~~Special inspection~~* ~~agencies for smoke control shall have~~  ~~expertise in fire protection engineering, mechanical engineering and certification as air~~  ~~balancers.~~

***Section 1710 Preconstruction Load Tests. Change Section 1710 to read as shown:***

**1710.1 General.** In evaluating the physical properties of materials and methods of construction that are not capable of being designed by *approved* engineering analysis or do not comply with the applicable referenced standards, the structural adequacy shall be predetermined based on the load test criteria established in this section.

**1710.2 Load test procedures specified.** Where specific load test procedures, load factors and acceptance criteria are included in the applicable referenced standards, such test procedures, load factors and acceptance criteria shall apply. In the absence of specific test procedures, load factors or acceptance criteria, the corresponding provisions in [Section 1710.3](javascript:Next('./icod_ibc_2012_17_sec010_par002.htm');) shall apply.

**1710.3 Load test procedures not specified.** Where load test procedures are not specified in the applicable referenced standards, the load-bearing and deformation capacity of structural components and assemblies shall be determined on the basis of a test procedure developed by a *registered design professional* that simulates applicable loading and deformation conditions. For components and assemblies that are not a part of the seismic force-resisting system, the test shall be as specified in [Section 1710.3.1.](javascript:Next('./icod_ibc_2012_17_sec010_par003.htm');) Load tests shall simulate the applicable loading conditions specified in [Chapter 16](javascript:Next('./icod_ibc_2012_16_sec001.htm');).

**1710.3.1 Test procedure.** The test assembly shall be subjected to an increasing superimposed load equal to not less than two times the superimposed design load. The test load shall be left in place for a period of 24 hours. The tested assembly shall be considered to have successfully met the test requirements if the assembly recovers not less than 75 percent of the maximum deflection within 24 hours after the removal of the test load. The test assembly shall then be reloaded and subjected to an increasing superimposed load until either structural failure occurs or the superimposed load is equal to two and one-half times the load at which the deflection limitations specified in [Section 1710.3.2](javascript:Next('./icod_ibc_2012_17_sec010_par004.htm');) were reached, or the load is equal to two and one-half times the superimposed design load. In the case of structural components and assemblies for which deflection limitations are not specified in [Section 1710.3.2](javascript:Next('./icod_ibc_2012_17_sec010_par004.htm');), the test specimen shall be subjected to an increasing superimposed load until structural failure occurs or the load is equal to two and one-half times the desired superimposed design load. The allowable superimposed design load shall be taken as the lesser of:

1. The load at the deflection limitation given in [Section 1710.3.2.](javascript:Next('./icod_ibc_2012_17_sec010_par004.htm');)

2. The failure load divided by 2.5.

3. The maximum load applied divided by 2.5.

**1710.3.2 Deflection.** The deflection of structural members under the design load shall not exceed the limitations in [Section 1604.3.](javascript:Next('./icod_ibc_2012_16_sec004_par002.htm');) The HVHZ shall comply with Section 1616.3.1

**1710.4 Wall and partition assemblies.** *Load-bearing wall* and partition assemblies shall sustain the test load both with and without window framing. The test load shall include all design load components. Wall and partition assemblies shall be tested both with and without door and window framing.

**1710.5 Exterior window and door assemblies.** The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with [Section 1710.5.1](javascript:Next('./icod_ibc_2012_17_sec010_par007.htm');) or [1710.5.2.](javascript:Next('./icod_ibc_2012_17_sec010_par008.htm');)  The design pressures, as determined from ASCE 7, are permitted to be multiplied by 0.6.

**~~Exception:~~** ~~Structural wind load design pressures for window units smaller than the size tested in accordance with Section 1710.5.1 or 1710.5.2 shall be permitted to be higher than the design value of the tested unit provided such higher pressures are determined by accepted engineering analysis. All components of the small unit shall be the same as the tested unit. Where such calculated design pressures are used, they shall be validated by an additional test of the window unit having the highest allowable design pressure.~~

**1710.5.1 Exterior windows and doors.** Exterior windows and ~~sliding~~ doors shall be tested by an approved independent testing laboratory, and shall be labeled to indicate compliance with the requirements of one of the following specifications: ~~as conforming to~~ ANSI/AAMA/NWWDA 101/I.S. 2 or ANSI/AAMA/WDMA/101/I.S.2/NAFS or AAMA/WDMA/CSA101/I.S.2/A440 or TAS 202 (HVHZ shall comply with TAS 202 utilizing ASTM E 1300 or Section 2404). ~~The~~ *~~label~~* ~~shall state the name of the manufacturer, the~~ *~~approved~~* ~~labeling agency and the product designation as specified in AAMA/WDMA/CSA101/I.S.2/A440.~~  ~~Exterior side-hinged doors shall be tested and~~ *~~labeled~~* ~~as conforming to AAMA/WDMA/CSA101/I.S.2/A440 or comply with Section 1710.5.2. Products tested and labeled as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 shall not be subject to the requirements of Sections 2403.2 and 2403.3.~~

**1710.5.1.1** Exterior windows and doors shall be labeled with a permanent label, marking, or etching providing traceability to the manufacturer and product. The following shall also be required either on a permanent label or on a temporary supplemental label applied by the manufacturer: information identifying the manufacturer, the product model/series number, positive and negative design pressure rating, product maximum size, glazing thickness, impact-resistance rating if applicable, Florida Product Approval number or Miami-Dade Product Approval number, applicable test standard(s), and approved product certification agency, testing laboratory, evaluation entity or Miami-Dade Product Approval.

The labels are limited to one design pressure rating per reference standard. The temporary supplemental label shall remain on the window or door until final approval by the building official.

**Exceptions:**

1. Door assemblies installed in nonhabitable areas where the door assembly and area are designed to accept water infiltration need not be tested for water infiltration.

2. Door assemblies installed where the overhang (OH) ratio is equal to or more than 1 need not be tested for water infiltration. The overhang ratio shall be calculated by the following equation:

OH ratio = OH Length/OH Height

Where:

OH length = The horizontal measure of how far an overhang over a door projects out from door surface.

OH height = The vertical measure of the distance from the door sill to the bottom of the overhang over a door.

3. Structural wind load design pressures for window and door units other than the size tested in accordance with Section 1710.5.1 shall be permitted to be different than the design value of the tested unit provided such different pressures are determined by accepted engineering analysis or validated by an additional test of the window or door unit to the different design pressure in accordance with section 1710.5.1. All components of the alternate size unit shall be the same as the tested or labeled unit.

i. Operable windows and doors rated in this manner shall comply with the following:

1. The frame area of the alternate size unit shall not exceed the frame area of the tested approved unit.

2. Shall vary from the tested approved unit only in width, height or load requirements.

3. Shall not exceed 100 percent of the proportional deflection for fiber stress of the intermediate members of the approved unit.

4. Shall not exceed 100 percent of the concentrated load at the juncture of the intermediate members and the frame of the approved unit.

5. Shall not exceed the air and water infiltration resistance of the tested approved unit.

6. Shall not exceed the maximum cyclic pressure of the tested approved unit when tested per TAS 201 and TAS 203 or ASTM E 1886 and ASTM E 1996 where applicable.

ii. Non-operable windows and doors rated in this manner shall comply with the following:

1. The frame area of the alternate size unit shall not exceed the frame area of the tested approved unit.

2. Shall vary from the tested approved unit only in width, height or load requirements.

3. The maximum uniform load distribution (ULD) of any side shall be equal to the uniform load carried by the side divided by the length of the side.

4. The ULD of any member shall not exceed the ULD of the corresponding member of the tested approved unit.

5. The ULD of each member shall be calculated in accordance with standard engineering analysis.

6. Shall not exceed the air and water infiltration resistance of the tested approved unit.

7. Shall not exceed the maximum cyclic pressure of the tested approved unit when tested per TAS 201 and 203 or ASTM E 1886 and ASTM E 1996 where applicable.

4. For window and door units tested in accordance with Section 1710.5.2, structural wind load design pressures for window and door units other than the size tested in accordance with Section 1710.5.2 shall be permitted to be different than the design value of the tested unit provided such different pressures are determined by accepted engineering analysis or validated by an additional test of the window or door unit to the different design pressure in accordance with Section 1710.5.2. All components of the alternate size unit shall be the same as the tested unit. Where engineering analysis is used, the glass shall comply with Section 2403, and sub-section i and ii of section 3) above.

5. Pass-through windows for serving from a single-family kitchen, where protected by a roof overhang of 5 feet (1.5 m) or more shall be exempted from the requirements of the water infiltration test.

**1710.5.1.2 Glass Strength:** Products tested and labeled as conforming to ANSI/AAMA/NWWDA 101/ I.S.2 or ANSI/AAMA/WDMA/101/ I.S.2/NAFS or AAMA/WDMA/CSA 101/I.S.2/A440 or TAS 202 shall not be subject to the requirements of Sections 2403.2 or 2403.3 or 2404.1. Determination of load resistance of glass for specific loads of products not tested and certified in accordance with Section 1710.5.1 shall be designed to comply with ASTM E 1300 in accordance with Section 2404.

**1710.5.2 Exterior windows and door assemblies not provided for in** [**Section 1710.5.1.**](javascript:Next('./icod_ibc_2012_17_sec010_par007.htm');)   
Exterior window and door assemblies shall be tested in accordance with ASTM E 330 or TAS202. HVHZ shall comply with TAS202. ~~Structural performance of garage doors and rolling doors shall be determined in accordance with either ASTM E 330 or ANSI/DASMA 108, and shall meet the acceptance criteria of ANSI/DASMA 108.~~ Exterior window and door assemblies containing glass shall comply with [Section 2403](javascript:Next('./icod_ibc_2012_24_sec003.htm');). The design pressure for testing shall be calculated in accordance with [Chapter 16](javascript:Next('./icod_ibc_2012_16_sec001.htm');). Each assembly shall be tested for 10 seconds at a load equal to 1.5 times the design pressure (HVHZ shall comply with TAS202).

**Exceptions:**

1. Door assemblies installed in nonhabitable areas where the door assembly and area are designed to accept water infiltration, need not be tested for water infiltration.

2. Door assemblies installed where the overhang (OH) ratio is equal to or more than 1 need not be tested for water infiltration. The overhang ratio shall be calculated by the following equation:

OH ratio = OH Length/OH Height

where:

OH Length = The horizontal measure of how far an overhang over a door projects out from the door’s surface.

OH Height = The vertical measure of the distance from the door’s sill to the bottom of the overhang over a door.

3. Custom doors.  Custom (one-of-a-kind) exterior door assemblies shall be tested by an approved testing laboratory or be engineered in accordance with accepted engineering practices.

**1710.5.2.1 Sectional garage doors and rolling doors.** Sectional garage doors and rolling doors shall be tested for determination of structural performance under uniform static air pressure difference in accordance with ANSI/DASMA 108, [ASTM E 330](javascript:vo();) Procedure A, or TAS 202. For sectional garage doors and rolling doors tested in accordance with [ASTM E 330](javascript:vo();), acceptance criteria shall be in accordance with ANSI/DASMA 108. (HVHZ shall comply with TAS 202.) Design pressures shall be determined from Table 1609.7(1) or [ASCE 7.](javascript:vo();) The design pressures, as determined from [ASCE 7](javascript:vo();), are permitted to be multiplied by 0.6.

**1710.5.2.1.1 Garage door labeling.** Garage doors shall be labeled with a permanent label provided by the garage door manufacturer. The label shall identify the garage door manufacturer, the garage door model/series number, the positive and negative design pressure rating, indicate impact rated if applicable, the installation instruction drawing reference number, the Florida Product Approval or Miami-Dade Product Approval number if applicable, and the applicable test standards. The required garage door components for an approved garage door assembly may be indicated using a checklist form on the label. If a checklist format is used on the label, the door installer or the garage door manufacturer shall mark the selected components on the checklist that are required to assemble an approved garage door system.  The installation instructions shall be provided and available on the job site.

**1710.5.3 Mullions.** Mullions or mulled fenestration assemblies shall be tested by an approved testing laboratory in accordance with either ASTM E 330, or TAS 202 (HVHZ shall comply with TAS 202), or shall be engineered using accepted engineering practice such as AAMA 450. Mullions tested as stand-alone units or qualified by engineering shall use performance criteria cited in Sections 1710.5.3.1, 1710.5.3.2 and 1710.5.3.3.

**1710.5.3.1 Load transfer**. Mullions shall be designed to transfer the design pressure loads applied by the window and door assemblies to the rough opening substrate.

**1710.5.3.2 Deflection.** Mullions shall be capable of resisting the design pressure loads applied by the window and door assemblies to be supported without deflecting more than L/175, where L is the span of the mullion in inches.

**1710.5.3.3 Structural safety factor.** Mullions that are tested by an approved testing laboratory shall be capable of resisting a load of 1.5 times the design pressure loads applied by the window and door assemblies to be supported. The design pressures, as determined from ASCE 7, are permitted to be multiplied by 0.6. Mullions that are qualified by engineering shall be capable of resisting the design pressure loads applied by the window and door assemblies to be supported without exceeding the allowable stress of the mullion elements.

**1710.5.4** Glazed curtain wall, window wall and storefront systems shall be tested in accordance with the requirements of this section and the Laboratory Test requirements of the American Architectural Manufacturers Association (AAMA) Standard 501, HVHZ shall comply with Section 2411.3.2.1.1.

**1710.5.5** Door components evaluated by an approved product evaluation entity, certification agency, testing laboratory or engineer may be interchangeable in exterior door assemblies provided that the door components provide equal or greater structural performance as demonstrated by accepted engineering practices.

**1710.6 Skylights and sloped glazing.** ~~Unit skylights and tubular daylighting devices (TDDs) shall comply with the requirements of~~ [~~Section 2405~~](javascript:Next('./icod_ibc_2012_24_sec005.htm');)~~. All other~~ Skylights and sloped glazing shall comply with the requirements of [Chapter 24](javascript:Next('./icod_ibc_2012_24_sec001.htm');). All skylights and sloped glazing in the HVHZ shall comply with TAS202.

**1710.7 Test specimens.** Test specimens and construction shall be representative of the materials, workmanship and details normally used in practice. The properties of the materials used to construct the test assembly shall be determined on the basis of tests on samples taken from the load assembly or on representative samples (when TAS202 is used, a minimum of three specimens) of the materials used to construct the load test assembly. Required tests shall be conducted or witnessed by an *approved agency*.

***Section 1710 – Preconstruction Load Tests. Add Section 1710.8 to read as shown:***

**1710.8 Impact resistant coverings.**

**1710.8.1 Labels.** A permanent label shall be provided by the product approval holder on all impact resistant coverings.

**1710.8.2** The following information shall be included on the labels on impact resistant coverings:

1. Product approval holder name and address.

2. All applicable methods of approval. Methods of approval include, but are not limited to Miami-Dade NOA; Florida Building Commission, TDI Product Evaluation; ICC-ES.

3. The test standard or standards specified at Section 1609.1.2, including standards referenced within the test standards specified at Section 1609.1.2 used to demonstrate code compliance.

4. For products with a Florida Product Approval Number or a Miami-Dade County Building and Neighborhood Compliance Department Notice of Acceptance Number (NOA), such numbers shall be included on the label.

**1710.8.3 Location of label.** The location of the label on the impact resistant covering shall be as follows:

1. Accordions: Bottom of the locking bar or center mate facing the exterior or outside.

2. Rollup: On the bottom of the hood facing the exterior or outside or on the bottom slat facing the exterior or outside.

3. Bahama Awning or Colonial Hinged: On the bottom, placed on the back of the shutter.

4. Panels: For metal and plastic panels the label may be embossed or printed spaced not more than every three (3) lineal feet on each panel. The label shall be applied by the holder of the product approval and shall face the exterior or outside.

5.Framed products: The label shall be on the side or bottom facing the exterior or outside.

6. Labels on all other products shall face the exterior or outside.

**1710.8.4 Installation.** All impact resistant coverings shall be installed in accordance with the manufacturer’s installation instructions and in accordance with the product approval. Installation instructions shall be provided and shall be available to inspection personnel on the job site. Opening protection components, fasteners, and other parts evaluated by an approved product evaluation entity, certification agency, testing laboratory, architect, or engineer and approved by the holder of the product approval may be interchangeable in opening protection assemblies provided that the opening protection component(s) provide equal or greater structural performance and durability as demonstrated by testing in accordance with approved test standards.

***Section 1710 – Preconstruction Load Tests. Add Section 1710.9 to read as shown:***

**1710.9 Soffit.**

**1710.9.1 Product Approval.** Manufactured soffit materials and systems shall be subject to statewide or local product approval as specified in FAC Rule 61G-20. The net free area of the manufactured soffit material or system shall be included in the product approval submittal documents.

**1710.9.2 Labels.** Individual manufactured soffit pieces shall be marked at not more than four feet on center with a number or marking that ties the product back to the manufacturer.

**1710.9.3** The following information shall be included on the manufactured soffit material packaging or on the individual manufactured soffit material or system pieces:

1. Product approval holder and/or manufacturer name and city and state of manufacturing plant.

2. Product model number or name.

3. Method of approval and approval numbers as applicable. Methods of approval include, but are not limited to: Florida Building Commission FL #; Miami-Dade NOA; TDI Product Evaluation; and, ICC-ES.

4.  The test standard or standards specified in Chapter 14 used to demonstrate code compliance.

5.  The net free area shall be included on the packaging or label.

***Section 1710 – Preconstruction Load Tests. Add Section 1710.9.4 to read as shown:***

**1710.9.4  Installation.** All manufactured soffit materials shall be installed in accordance with the manufacturer’s installation instructions and in accordance with the product approval. Installation instructions shall be provided and shall be available to inspection personnel on the job site. Soffit pieces, components, fasteners, and other parts evaluated by an approved product evaluation entity, certification agency, testing laboratory, architect, or engineer and approved by the holder of the product approval may be interchangeable in manufactured soffit systems provided that the soffit system component or components provide equal or greater structural performance and durability as demonstrated by testing in accordance with approved test standards.

All exterior wall coverings and soffits shall be capable of resisting the design pressures specified for walls for components and cladding loads in accordance with Section 1609.1. Manufactured soffits shall be tested at 1.5 times the design pressure. The design pressures, as determined from ASCE 7, are permitted to be multiplied by 0.6.

***Add Section 1710.10 to read as shown:***

**1710.10 ~~1715.5.4.2~~ Masonry, concrete or other structural substrate.**Where the wood shim or buck thickness is less than 11/2 inches (38 mm), window and door assemblies shall be anchored through the main frame or by jamb clip or subframe system, in accordance with the manufacturer’s published installation instructions. Anchors shall be securely fastened directly into the masonry, concrete or other structural substrate material. Unless otherwise tested, bucks shall extend beyond the interior face of the window or door frame such that full support of the frame is provided. Shims shall be made from materials capable of sustaining applicable loads, located and applied in a thickness capable of sustaining applicable loads. Anchors shall be provided to transfer load from the window or door frame to the rough opening substrate.

Where the wood buck thickness is 11/2 inches (38 mm) or greater, the buck shall be securely fastened to transfer load to the masonry, concrete or other structural substrate and the buck shall extend beyond the interior face of the window or door frame. Window and door assemblies shall be anchored through the main frame or by jamb clip or subframe system or through the flange to the secured wood buck in accordance with the manufacturer’s published installation instructions. Unless otherwise tested, bucks shall extend beyond the interior face of the window or door frame such that full support of the frame is provided. Shims shall be made from materials capable of sustaining applicable loads, located and applied in a thickness capable of sustaining applicable loads. Anchors shall be provided to transfer load from the window or door frame assembly to the secured wood buck.

***Section 1711 Material and Test Standards. Change Section 1711 to read as shown:***

**1711.1 Joist hangers and connectors.** Testing of joist hangers and similar connectors shall be in accordance with either Section~~s~~ 1711.1.1 ~~through~~ or 1711.1.~~3~~2, as applicable.

**1711.1.1 Test Procedure Using ASTM D 7147.**The allowable load of joist hangers and similar connectors shall be permitted to be determined using ASTM D 7147.

**1711.1~~.1~~.2 Test Procedure using ASTM D 1761 ~~General~~.** The allowable vertical load-bearing capacity, torsional moment capacity and deflection characteristics of joist hangers and similar connectors  shall be permitted to be determined in accordance with ASTM D 1761 using lumber having a specific gravity of 0.49 or greater, but not greater than 0.55, as determined in accordance with AF&PA NDS for the joist and headers.

**Exception:** The joist length shall not be required to exceed 24 inches (610 mm).

**1711.1.2.1 Vertical load capacity for joist hangers and similar connectors.** The vertical load-bearing capacity for the joist hanger or connector shall be determined by testing a minimum of three joist hanger or connector  assemblies as specified in ASTM D 1761. If the ultimate vertical load for any one of the tests varies more than 20 percent from the average ultimate vertical load, at least three additional tests shall be conducted. The allowable vertical load-bearing of the joist hanger shall be the lowest value determined from the following:

1. The lowest ultimate vertical load for a single hanger or connector from any test divided by three (where three tests are conducted and each ultimate vertical load does not vary more than 20 percent from the average ultimate vertical load).

2. The average ultimate vertical load for a single hanger or connector from all tests divided by three (where six or more tests are conducted).

3. The average from all tests of the vertical loads that produce a vertical movement of the joist with respect to the header of 1/8 inch (3.2 mm).

4. The sum of the allowable design loads for nails or other fasteners utilized to secure the joist hanger or connector to the wood members and allowable bearing loads that contribute to the capacity of the hanger.

5. The allowable design load for the wood members forming the connection.

**1711.1.2~~.1~~.2 Design value modifications for joist hangers and connectors.**Allowable design values for joist hangers and connectors  that are determined by Item 4 or 5 in Section 1711.1.2.1 shall be permitted to be modified by the appropriate load duration factors as specified in AF&PA NDS but shall not exceed the direct loads as determined by Item 1, 2 or 3 in Section 1711.1.2.1. Allowable design values determined by Item 1, 2 or 3 in Section 1711.1.2.1 shall not be modified by load duration factors.

**1711.1.2.3 Torsional moment capacity for joist hangers.**The torsional moment capacity for the joist hanger shall be determined by testing at least three joist hanger assemblies as specified in ASTM D 1761. The allowable torsional moment of the joist hanger shall be the average torsional moment at which the lateral movement of the top or bottom of the joist with respect to the original position of the joist is 1/8 inch (3.2 mm).

**1711.2 Concrete and clay roof tiles.** Testing of concrete and clay roof tiles shall be in accordance with [Sections 1711.2.1](javascript:Next('./icod_ibc_2012_17_sec011_par006.htm');) and [1711.2.2](javascript:Next('./icod_ibc_2012_17_sec011_par007.htm');), as applicable.

**1711.2.1 Overturning resistance.** Concrete and clay roof tiles shall be tested to determine their resistance to overturning due to wind in accordance with SBCCI SSTD 11 or TAS 108 (high-velocity hurricane zones shall comply with TAS 108) and [Chapter 15](javascript:Next('./icod_ibc_2012_15_sec001.htm');).

**1711.2.2 Wind tunnel testing.** Where concrete and clay roof tiles do not satisfy the limitations in [Chapter 16](javascript:Next('./icod_ibc_2012_16_sec001.htm');) for rigid tile, a wind tunnel test shall be used to determine the wind characteristics of the concrete or clay tile roof covering in accordance with SBCCI SSTD 11 or TAS 108 (high-velocity hurricane zones shall comply with TAS 108) and [Chapter 15](javascript:Next('./icod_ibc_2012_15_sec001.htm');).

**Chapter 18 – Soils and Foundations**

***Section 1801 – General. Change Section 1801.2 to read as shown:***

**1801.2 Design basis.** Allowable bearing pressures, allowable stresses and design formulas provided in this chapter shall be used with the *allowable stress design* load combinations specified in Section 1605.3 ~~the HVHZ shall comply with Section 1618.9~~. The quality and design of materials used structurally in excavations and foundations shall comply with the requirements specified in Chapters 16, 19, 21, 22 and 23 of this code. Excavations and fills shall also comply with Chapter 33.

***Section 1804 – Excavation, Grading and Fill. Change Section 1804.4 to read as shown:***

**1804.4 Grading and fill in flood hazard areas.** In *flood hazard areas* established in Section 1612.3, grading and/or fill shall not be *approved*:

1. Unless such fill is placed, compacted and sloped to minimize shifting, slumping and erosion during the rise and fall of flood water and, as applicable, wave action.

2. In floodways, unless it has been demonstrated through hydrologic and hydraulic analyses performed by a *registered design professional* in accordance with standard engineering practice that the proposed grading or fill, or both, will not result in any increase in flood levels during the occurrence of the *design flood*.

3. In ~~flood hazard areas subject to high-velocity wave action~~ coastal high hazard areas, unless such fill is conducted and/or placed to avoid diversion of water and waves toward any building or structure.

4. Where design flood elevations are specified but floodways have not been designated, unless it has been demonstrated that the cumulative effect of the proposed *flood hazard area* encroachment, when combined with all other existing and anticipated *flood hazard area* encroachment, will not increase the design flood elevation more than 1 foot (305 mm) at any point.

***Change Section 1804.5 to read as shown:***

**1804.5 Compacted fill material.** (No Change)

**Exception:** Compacted fill material 12 inches (305 mm) in depth or less need not comply with an *approved* report, provided the in-place dry density is not less than 90 percent of the maximum dry density at optimum moisture content determined in accordance with ASTM D 1557. ~~The compaction shall be verified by~~ *~~special inspection~~* ~~in accordance with Section 1705.6.~~

***Section 1806 – Presumptive Load Bearing Values of Soils. Change Section 1806.1 to read as shown:***

**1806.1 Load combinations.** The presumptive load-bearing values provided in Table 1806.2 shall be used with the *allowable* *stress design* load combinations specified in Section 1605.3; ~~the HVHZ shall comply with Section 1618.9~~. The values of vertical foundation pressure and lateral bearing pressure given in Table 1806.2 shall be permitted to be increased by one-third where used with the alternative basic load combinations of Section 1605.3.2; ~~the HVHZ shall comply with Section 1618.9~~ that include wind or earthquake loads.

***Section 1807 – Foundation Walls, Retaining Walls and Embedded Posts and Poles. Change Section 1807.2 to read as shown:***

**1807.2 Retaining walls.** Retaining walls shall be designed in accordance with Sections 1807.2.1 through 1807.2.~~3~~ 4.

**1807.2.1 - 1807.2.3** (No change)

**1807.2.4 Reinforced masonry retaining walls.** Vertical reinforcement for masonry retaining walls shall comply with Table 1807.2.4 or shall be designed in accordance with TMS 402/ACI 530/ASCE 5. Masonry shall be fully grouted with a minimum f'm of 1,500 psi (10 343 kPa). Mortar for masonry shall be Type M or S and laid in running bond. The specified location of the reinforcement shall equal or exceed the effective depth distance, d, noted in Table 1807.2.4 and shall be measured from the exposed side of the wall to the center of the vertical reinforcement. Footings for reinforced masonry retaining walls shall be designed in accordance with ACI 318.

**TABLE 1807.2.4  
REINFORCEMENT FOR MASONRY RETAINING WALLSa**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Nominal Wall thickness  [(in.) (mm)] | Wall depth, H,  ft. (m) | Reinforcement size & spacing for equivalent fluid weight of soil,  pcf (kN/m3), of: | | |
| 30 (4.7) | 45 (7.1) | 60 (9.4) |
|  | 4.0 (1.2) | #4 at 64 in. | #4 at 40 in. | #4 at 32 in. |
|  | 4.7 (1.4) | #4 at 40 in. | #4 at 24 in. | #4 at 16 in. |
| 8 (203) | 5.3 (1.6) | #4 at 24 in. | #4 at 16 in. | #5 at 16 in. |
|  | 6.0 (1.8) | #5 at 24 in. | #6 at 16 in. | #8 at 16 in. |
|  | 6.7 (2.0) | #5 at 16 in. | #6 at 8 in. | — |
|  | 4.0 (1.2) | #4 at 72 in. | #4 at 64 in. | #4 at 48 in. |
|  | 4.7 (1.4) | #4 at 56 in. | #4 at 40 in. | #4 at 24 in. |
|  | 5.3 (1.6) | #4 at 40 in. | #4 at 24 in. | #4 at 16 in. |
| 10 (254) | 6.0 (1.8) | #4 at 24 in. | #4 at 16 in. | #5 at 16 in. |
|  | 6.7 (2.0) | #4 at 16 in. | #5 at 16 in. | #6 at 16 in. |
|  | 7.3 (2.2) | #5 at 24 in. | #6 at 16 in. | #6 at 8 in. |
|  | 8.0 (2.4) | #5 at 16 in. | #6 at 8 in. | — |
|  | 4.0 (1.2) | #4 at 72 in. | #4 at 72 in. | #4 at 64 in. |
|  | 4.7 (1.4) | #4 at 72 in. | #4 at 48 in. | #4 at 40 in. |
|  | 5.3 (1.6) | #4 at 48 in. | #4 at 32 in. | #4 at 24 in. |
|  | 6.0 (1.8) | #4 at 32 in. | #4 at 24 in. | #4 at 16 in. |
| 12 (305) | 6.7 (2.0) | #4 at 24 in. | #4 at 16 in. | #5 at 16 in. |
|  | 7.3 (2.2) | #4 at 16 in. | #5 at 16 in. | #6 at 16 in. |
|  | 8.0 (2.4) | #5 at 24 in. | #5 at 16 in. | #7 at 16 in. |
|  | 8.7 (2.7) | #5 at 16 in. | #7 at 16 in. | #7 at 8 in. |
|  | 9.3 (2.8) | #6 at 16 in. | #7 at 8 in. | — |

1. Based on fully grouted masonry; f'm = 1500 psi (10.3 MPa); d = 5 in., 7 in. and 9 in. (127, 178 and 229 mm) for wall thicknesses of 8, 10, and 12 in. (203, 254, and 305 mm), respectively; level backfill to top of wall.

***Section 1808 – Foundations. Change Section 1808.3 to read as shown:***

**1808.3 Design loads.** Foundations shall be designed for the most unfavorable effects due to the combinations of loads specified in Section 1605.2 or 1605.3. The dead load is permitted to include the weight of foundations and overlying fill. Reduced live loads, as specified in Sections 1607.10 and 1607.12 shall be permitted to be used in the design of foundations.

***Section 1810 – Deep Foundations. Change Section 1810.4.12 to read as shown:***

**1810.4.12 Special inspection.** Reserved. *~~Special inspections~~* ~~in accordance with Sections 1705.7 and 1705.8 shall be provided for driven and cast-in-place deep foundation elements, respectively.~~ *~~Special inspections~~* ~~in accordance with Section 1705.9 shall be provided for helical piles.~~

***Section 1816 – Termite Protection. Add Section 1816 to read as shown:***

**1816.1 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 Section 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.”

**1816.1.1** If soil treatment is 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.

**1816.1.2** 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.

**1816.1.3** 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.

**1816.1.4** If soil treatment is used for subterranean termite prevention, chemically treated soil shall be protected with a minimum 6 millimeter 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.

**1816.1.5** 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.

**1816.1.6** 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.

**1816.1.7** If a registered termiticide formulated and registered as a bait system is used for subterranean termite prevention, Sections 1816.1.1 through 1816.1.6 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. ~~for a~~  ~~minimum of five years from the issue of the certificate of occupancy~~ 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.

**1816.1.8**  If a registered termiticide formulated and registered as a wood treatment is used for subterranean termite prevention, Sections [1816.1.1](http://infosolutions.com/icce/gateway.dll?f=xhitlist$xhitlist_x=Advanced$xhitlist_vpc=first$xhitlist_xsl=querylink.xsl$xhitlist_sel=title;path;content-type;home-title$xhitlist_d=Florida%20Custom(Build2004_FL)$xhitlist_q=%5bfield%20folio-destination-name:'FLBuild1816.1.1'%5d$xhitlist_md=target-id=0-0-0-13681) through [1816.1.6](http://infosolutions.com/icce/gateway.dll?f=xhitlist$xhitlist_x=Advanced$xhitlist_vpc=first$xhitlist_xsl=querylink.xsl$xhitlist_sel=title;path;content-type;home-title$xhitlist_d=Florida%20Custom(Build2004_FL)$xhitlist_q=%5bfield%20folio-destination-name:'FLBuild1816.1.6'%5d$xhitlist_md=target-id=0-0-0-13691) do not apply. Application of a wood treatment termiticide shall be as required by label directions for use, and must be completed prior to final building approval. Changes in framing or additions to framing in areas of the structure requiring treatment that occur after the initial wood treatment must be treated prior to final building approval.

**1816.2 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, 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.

***Section 1817 High-Velocity Hurricane Zones— Excavations. Modify section 1817 to read as shown:***

**SECTION 1817**

**HIGH-VELOCITY HURRICANE ZONES –**

**EXCAVATIONS**

**RESERVED**

**~~1817.1 General.~~** ~~Until provisions for permanent support have been made, all excavations shall be properly guarded and protected so as to prevent them from becoming dangerous to life and property and shall be sheet piled, braced and/or shored, where necessary, to prevent the adjoining earth from caving in; such protection to be provided by the person causing the excavation to be made. All excavations shall comply with the minimum requirements of Section 553.60, Florida Statute "Trench Safety Act," and 29 CFR 1926-650 (P) "Occupational Safety and Health Administration Excavation Safety Act." No excavation, for any purpose, shall extend within 1 foot (305 mm) of the angle of repose of any soil bearing footing or foundation unless such footing or foundation is first properly underpinned or protected against settlement.~~

**~~1817.2 Permanent excavations.~~** ~~No permanent excavation shall be made nor shall any construction excavations be left on any lot that will endanger adjoining property or buildings or be a menace to public health or safety. Any such excavations made or maintained shall be properly drained and such drainage provisions shall function properly as long as the excavation exists. Permanent excavations shall have retaining walls of steel, masonry, concrete or similar approved material of sufficient strength to retain the embankment together with any surcharged loads.~~

**~~1817.3 Enforcement.~~** ~~Where, in the opinion of the building official, an unsafe condition may result or damage may occur as the result of an excavation, he or she may order the work stopped or may approve the work of excavation subject to such limitations, as he or she may deem necessary.~~

***Section 1818 High-Velocity Hurricane Zones— Bearing Capacity of Soil. Modify section 1818 to read as shown:***

**SECTION 1818**

**HIGH-VELOCITY HURRICANE ZONES—**

**BEARING CAPACITY OF SOIL**

**RESERVED**

**~~1818.1 Design bearing capacity.~~** ~~Plans for new buildings, structures or additions shall clearly identify the nature of the soil under the structure and the allowable bearing capacity used in sizing the building foundation support system.~~

**~~Exception:~~** ~~See Section 1822.1 for plans for new buildings, structures or additions that are to be supported on a piling foundation system.~~

**~~1818.2 Allowable bearing capacity.~~** ~~Prior to the installation of any footing foundation system for new buildings, structures or additions, the building official shall be provided with a statement of allowable bearing capacity from an architect or professional engineer. Said statement shall clearly identify the allowable in-place bearing capacity of the building pad for the new building or addition and verify the existing soil conditions. The certified in-place bearing capacity shall have been determined using recognized tests or rational analysis and shall meet or exceed the design bearing capacity identified under Section 1818.1.~~

***Section 1819 High-Velocity Hurricane Zones— Soil Bearing Foundations. Modify section 1819 to read as shown:***

**SECTION 1819**

**HIGH-VELOCITY HURRICANE ZONES—**

**SOIL BEARING FOUNDATIONS**

**RESERVED**

**~~1819.1 General.~~** ~~Footings shall be constructed of reinforced concrete, as set forth in Chapter 19 (High-Velocity Hurricane Zones) of this code and in this section, and shall, insofar as is practicable, be so designed that the soil pressure shall be reasonably uniform to minimize differential settlement.~~

**~~1819.2 Continuous wall footings.~~**

**~~1819.2.1~~** ~~Footings under walls shall be continuous or continuity otherwise provided and shall be not less than required to keep the soil pressure within that set forth in Section 1818 nor less than the following minimums:~~

|  |  |  |
| --- | --- | --- |
| **~~Allowable bearing capacity pounds per square foot~~** | **~~No. of Stories~~** | **~~Minimum Depth and Width~~~~2~~ ~~(inches)~~** |
| ~~2000 2000~~ | ~~1 2~~ | ~~12 × 16~~~~1~~ ~~12 × 24~~ |
| ~~For SI: 1 inch = 25.4 mm; 1 pound per square foot 47.89 Pa.   Based on rational analysis and soil investigation as set forth in~~ [~~Section 1818~~](http://ecodes.citation.com/cgi-exe/cpage.dll?pg=x&rp=/indx/ST/fl/st/b200v07/st_fl_st_b200v07_18.htm&sid=2010122312103388048&aph=0&cid=iccf&uid=icsc0418&clrA=005596&clrV=005596&clrX=005596&ref=/nonindx/ST/fl/st/b200v07/index.htm#b=1818)~~, the footing size or bearing capacity may vary, but the minimum width of a footing under the main walls of the building shall not be less than 16 inches nor less than 8 inches more than the width of the wall.   NOTES:  1. For single-story wood frame exterior walls, the minimum size continuous footing shall be 16 inches deep × 24 inches wide.  2. Any continuous wall footing acting as a shear wall foundation shall be specifically designed for that purpose.~~ | | |

**~~1819.2.2~~** ~~Masonry fences, flower bins, steps and similar decorative structures shall have reinforced concrete foundations designed for all live, dead and wind loads as set forth in Chapter 16 (High-Velocity Hurricane Zones) of this code. The minimum size of these foundations shall be as follows:~~

|  |  |  |
| --- | --- | --- |
| **~~Allowable bearing capacity (pounds per square foot)~~** | **~~Unbraced Wall Above Grade (ft)~~** | **~~Minimum Depth and Width~~~~2~~ ~~(inches)~~** |
| ~~2,000  2,000  2,000~~ | ~~Less than or equal to 3 feet Greater than 3 feet but less than and including 6 feet Greater than 6 feet~~ | ~~12 x 16  12 x 36  None Provided~~~~1~~ |
| ~~For SI: 1 inch = 25.4 mm; 1 foot = 304.8 mm; 1 pound per square foot = 47.88 kPa.   NOTES:  1. Foundations for masonry fences, flower bins, steps and similar decorative structures with unbraced heights in excess of six feet shall be based on rational analysis.  2. The minimum continuous footings specified in this section shall be reinforced in accordance with Section 1819.3.~~ | | |

**~~1819.2.3~~** ~~Based on rational analysis and soil investigation as set forth in Section 1818, the footing size or bearing capacity may vary, but the minimum width of a footing under masonry fences, flower bins, steps and similar decorative structures shall not be less than 16 inches (406 mm) nor less than 8 inches (203 mm) more than the width of the wall.~~

**~~Exception:~~** ~~Masonry fences, wing walls and other similar walls that are exposed to lateral wind forces and do not have any lateral restraint above grade, shall have their continuous wall footings placed so the top of footing is no less than 16 inches (406 mm) below grade.~~

**~~1819.3~~** ~~The minimum continuous footings specified in this section shall be reinforced as follows:~~

|  |  |
| --- | --- |
| **~~Reinforcing~~** | **~~Foundation Width~~** |
| ~~2 # 5 3 # 5 4 # 5~~ | ~~16" and 20" wide 24" and 30" wide 36" wide~~ |

**~~1819.3.1~~** ~~Where footings are 30 inches (762 mm) or more in width, cross bars designed to resist bending at the face of the foundation wall shall be provided.~~

**~~1819.3.1.1~~** ~~Equivalent areas in #4 reinforcing bars may be substituted for the sizes as specified in Section 1819.3.~~

**~~1819.3.1.2~~** ~~Splices in reinforcing bars shall be not less than 36 bar diameters and reinforcement shall be continuous around all corners and changes in direction. Continuity shall be provided at corners or changes in direction by bending the longitudinal steel around the corner 48 bar diameters or by adding matching reinforcing steel, which shall extend 48 bar diameters from each corner or change in direction When three or more bars are required, the bars shall be held in place and aligned by transverse bars spaced not more than 4 feet (1219 mm) apart.~~

**~~1819.3.1.3~~** ~~The reinforcement for footings and other principal structural members in which concrete is deposited against the ground shall have not less than 3 inches (76 mm) of concrete between the reinforcement and the ground contact surface. If concrete surfaces after removal of the forms are to be exposed to the weather or be in contact with the ground, the reinforcement shall be protected with not less than 2 inches (51 mm) of concrete for bars larger than #5 and 11/2 (38 mm) for #5 or smaller bars.~~

**~~1819.3.1.4~~** ~~Excavations for continuous footings shall be cut true to line and grade and the sides of footings shall be formed, except where soil conditions are such that the sides of the excavation stand firm and square. Excavations shall be made to firm, clean bearing soil.~~

**~~1819.4~~** ~~Continuous footings shall be placed level and any changes in the grade of such footings shall be made with a vertical tie of the same cross section and design as the footings, or the smaller of the footings, so joined.~~

**~~1819.4.1~~** ~~Continuous footings with eccentric loading shall be designed to limit the soil pressure at the edges to within acceptable values by means of counterbalancing or by other approved methods.~~

**~~1819.4.2~~** ~~When foundation walls are to be poured separately from the footing, they shall be keyed and doweled to the footing with no less than #4 dowels, 20 diameters in length above and below the joint, spaced not more than 4 feet (1219 mm) apart. Where footing depth does not allow straight dowels, standard hooks will be allowable.~~

**~~1819.4.3~~** ~~Concrete footing and pads shall not receive superimposed loads until 12 hours or more after the concrete is placed.~~

**~~1819.4.4~~** ~~Excavations for footings and foundations, which are to serve as forms, shall be thoroughly wetted prior to the placement of concrete.~~

**~~1819.4.5~~** ~~The top of all continuous footings shall be a minimum of 8 inches (203 mm) below grade.~~

**~~1819.5 Isolated footings.~~** ~~Dimensions for an isolated footing shall not be less than 12 inches (305 mm) deep and 24 inches square (.02 m2). Isolated footings in soil having low lateral restraint and isolated piers shall be provided with adequate bracing to resist lateral movement.~~

**~~1819.5.1~~** ~~Isolated footings with eccentric loading shall be designed to limit the soil pressure at the edges by means of footing straps or other approved methods.~~

**~~1819.5.2~~** ~~When isolated footings support reinforced concrete columns, dowels equivalent in number and area to the column reinforcement and having a length not less than 36 diameters above and below the joint shall be provided in the footing. Where the footing depth precludes straight dowels, standard ACI hooks will be allowable. Such dowels, or anchor bolts as required for steel columns, shall be held to proper grade and location during the pouring of the footing by means of templates or by other approved methods.~~

**~~1819.5.3~~** ~~The top of all isolated footings shall be a minimum of 8 inches (203 mm) below grade.~~

**~~1819.5.4~~** ~~Any isolated footing subjected to uplift and/or overturning forces shall be specifically designed for that purpose, as set forth in Section 1620.~~

**~~1819.6 Lateral sliding resistance.~~** ~~The resistance of structural walls to lateral sliding shall be calculated by combining the values derived from the lateral bearing and the lateral sliding resistance shown in Table 1819.6 unless data to substantiate the use of higher values are submitted for approval. For clay, sandy clay and clayey silt, in no case shall the lateral sliding resistance exceed one-half the dead load.~~

**~~TABLE 1819.6~~**

**~~ALLOWABLE LATERAL PRESSURE~~**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~CLASS OF MATERIALS~~** | | **~~LATERAL BEARING (psf/ft BELOW NATURAL GRADE)~~** | **~~LATERAL SLIDING~~** | |
| **~~Coefficient of Friction (a)~~** | **~~Resistance (psf)(b)~~** |
| ~~1. Sedimentary and foliated rock 2. Sandy gravel and/or gravel 3. Sand, silty sand, clayey sand, silty gravel land clayey gravel 4. Clay, sandy clay, silty clay, clayey silt, silt and sandy silt~~ | | ~~400 200 150 100~~ | ~~0.35 0.35 0.25~~ | ~~130~~ |
| ~~For SI: 1 pound per square foot = 47.88 Pa.  NOTES:  a. Coefficient to be multiplied by the dead load.  b. Lateral sliding resistance to be multiplied by the contact area, as limited by Section 1819.6.~~ | | |

**~~1819.6.1 Increases in allowable lateral sliding resistance.~~** ~~The resistance values derived from the table may be increased by the tabular value for each additional foot of depth to a maximum of 15 times the tabular value. Isolated poles for uses such as flagpoles or signs and poles used to support buildings which are not adversely affected by 1/2-inch (12.7 mm) motion at the ground surface because of short-term lateral loads may be designed using lateral bearing values equal to two times the tabular values.~~

**~~1819.7 Designs employing lateral bearing.~~** ~~Designs to resist lateral loads employing posts or poles as columns embedded in earth or embedded in concrete footings in the earth shall conform to the requirements of Sections 1819.7.1 through 1819.7.2.1.~~

**~~1819.7.1 Limitation.~~** ~~Posts embedded in earth shall not be used to provide lateral support for structural or non structural materials such as plaster, masonry or concrete unless bracing is provided that develops the limited deflection required.~~

**~~1819.7.2 Design criteria.~~** ~~The depth to resist lateral loads shall be determined by the design criteria in Sections 1819.7.2.1 through 1819.7.2.2 or by other methods approved by the building official.~~

**~~1819.7.2.1 Unconstrained.~~** ~~The following formula shall be used in determining the depth of embedment required to resist the lateral loads where no constraint is provided at the ground surface, such as a structural diaphragm.~~

~~d = 0.5A {1 + [1 + (4.36h / A )]1/2}~~

~~Where:~~

~~A = 2.34P /(S 1b )~~

~~b = diameter of round post or diagonal dimension of square post or footing, feet.~~

~~d = depth of embedment in earth in feet but not over 12 feet (3658 mm) for purpose of computing lateral pressure.~~

~~h = distance in feet from ground surface to point of application of P .~~

~~P = applied lateral force, pounds.~~

~~S 1 = Allowable lateral soil-bearing pressure as set forth in Table 1819.6 based on a depth of one-third the depth of embedment, pounds per square foot.~~

~~S 3 = Allowable lateral soil-bearing pressure as set forth in Table 1819.6 based on a depth equal to the depth of embedment, pounds per square foot.~~

**~~1819.7.2.2 Constrained~~**~~. The following formula shall be used in determining the depth of embedment required to resist the lateral loads where constraint is provided at the ground surface, such as a rigid floor or rigid ground surface pavement.~~

~~d 2 = 4.25(Ph / S 3b )~~

~~or alternately~~

~~d 2 = 4.25(Mg / S 3b )~~

~~Where:~~

~~Mg = Moment in the post at grade, foot-pounds.~~

***Section 1820 High-Velocity Hurricane Zones— Concrete Slabs on Fill. Modify section 1820 to read as shown:***

**SECTION 1820**

**HIGH-VELOCITY HURRICANE ZONES-**

**CONCRETE SLABS ON FILL**

**RESERVED**

**~~1820.1~~** ~~Concrete floors placed directly on the supporting soil shall comply with this section.~~

**~~1820.2~~** ~~Where it is proposed to place concrete slabs directly on the supporting soil, a subgrade shall be thoroughly compacted by approved methods. All fill placed under slabs shall be clean sand or rock, free of debris and other deleterious materials. The maximum size of rock within 12 inches (305 mm) below the floor slab in compacted fill shall be 3 inches (76 mm) in diameter. Where fill material includes rock, large rocks shall not be allowed to nest and all voids shall be carefully filled with small stones or sand, and properly compacted.~~

**~~1820.3~~**~~. Concrete floor slabs placed directly on the supporting soil shall be a minimum of 4 inches (102 mm) in thickness, reinforced with not less than 0.028 square inches (18 mm2) of reinforcing per linear foot of slab in each direction.~~

**~~1820.3.1~~** ~~Fill supporting such slabs shall be compacted under the supervision of a special inspector to a minimum of 95 percent of maximum dry density for all layers, as verified by field density tests specified in Section1820.3.2.~~

**~~1820.3.2~~** ~~Tests shall be made in accordance with Methods of Test for Moisture Density Relations of Soils, ASTM D 1557 modified to use 25 blows on five layers with a 10-pound (5 kg) hammer dropping 18 inches (457 mm). In addition, a minimum of one in-place field density test shall be performed for each 2,500 square feet (232 m2), or fraction thereof, for each lift of compacted soil, and such testing shall be performed in accordance with either ASTM D 1556, Standard Test Method for Density of Soil In-Place by the Sandcone; or ASTM D 2922, Standard Test Methods for Density of Soil and Soil Aggregate in-place by Nuclear Methods (Shallow Depth), or other approved methods.~~

**~~1820.3.3~~** ~~Where a concrete slab is supported by a foundation wall or continuous footing, the effect of the support shall be considered in the design.~~

**~~1820.3.4~~** ~~All concrete slab edges and concrete beams supporting exterior walls shall be recessed a minimum of 3/4 inch (19 mm) below top of slab for a width of the exterior wall, or provided with an alternate water-stop method approved by the building official.~~

**~~1820.3.5~~** ~~The discontinuous edges of all slabs surrounding swimming pools and floor slabs for screen patios and utility sheds shall be at least a minimum of 8 inches (203 mm) deep and 8 inches (203 mm) wide and shall be reinforced with one continuous #5 bar.~~

**~~1820.3.6~~** ~~Reinforced concrete slabs on fill for garbage containers shall be a minimum of 1 foot (305 mm) larger on all sides than the garbage receptacle (dumpster) and a minimum thickness of 6 inches (152 mm).~~

**~~1820.4~~** ~~When polyethylene sheets are used as a vapor barrier beneath a ground floor slab, the subgrade for that slab shall be considered a formed surface for the purpose of reinforcing steel coverage.~~

**~~1820.5~~** ~~Concrete slabs outside of buildings, other than patios and pool slabs, where placed directly on the supporting soil, for minor accessory uses such as, but not limited to, walkways, driveways, minor equipment pads, etc, shall be not less than 4 inches (102 mm) thick. Such slabs shall be placed on clean, thoroughly compacted sand or crushed rock free from organics, debris or other deleterious materials.~~

***Section 1821 High-Velocity Hurricane Zones— Monolithic Footings. Modify section 1821 to read as shown:***

**SECTION 1821**

**HIGH-VELOCITY HURRICANE ZONES-**

**MONOLITHIC FOOTINGS**

**RESERVED**

**~~1821.1~~** ~~Monolithic footings under walls shall be continuous or continuity otherwise provided and shall be not less than required to keep the soil pressure within that set forth in Section 1818 nor less than the following minimums:~~

|  |  |  |
| --- | --- | --- |
| **~~Allowable bearing capacity (Pounds per square foot)~~** | **~~No. of Stories~~** | **~~Minimum Depth and Width~~~~(2)~~~~(inches)~~** |
| ~~2000 2000~~ | ~~1 2~~ | ~~12 x 16~~~~(1)~~ ~~12 x 24~~ |

|  |
| --- |
| ~~For SI: 1 inch = 25.4 mm, 1 pound per square foot = 47.88 Pa.~~ |

~~Based on rational analysis and soil investigation as set forth in Section 1818, the footing size or bearing capacity may vary, but the minimum width of a footing under the main walls of the buildings shall not be less than 16 inches nor less than 8 inches more than the width of the foundation wall.~~

**~~NOTES:~~**

~~(1) For single story wood frame exterior walls, the minimum size continuous footing shall be 16 inches deep x 24 inches wide.~~

~~(2) Any continuous wall footing acting as a shear wall foundation shall be specifically designed for that purpose.~~

**~~1821.1.1~~** ~~A minimum outside finish grade of 8 inches (203 mm) above the bottom of the exterior monolithic footing shall be required, but in no case shall the outside finish grade be above the top of the finish slab surface unless sufficient means to minimize moisture intrusion into the structure have been provided to the satisfaction of the building official.~~

**~~1821.1.2~~** ~~Continuous monolithic footings shall be placed level and any change in the grade of such footings shall be made with a step of the same cross section and design as the monolithic footings, or the smaller of the monolithic footings, so joined.~~

**~~1821.1.3~~** ~~Continuous monolithic footings with eccentric loading shall be designed to limit the soil pressure at the edges to within acceptable values by means of counterbalancing or by other approved methods.~~

**~~1821.1.4~~** ~~Concrete monolithic footings and pads shall not receive superimposed loads until 12 hours or more after the concrete is placed.~~

**~~1821.1.5~~** ~~Excavations for monolithic footings and foundations, which are to serve as forms, shall be thoroughly wet prior to placing concrete.~~

**~~1821.1.6~~** ~~Monolithic foundation systems shall be limited for the support of a maximum of two stories and/or floors or a maximum mean roof height of 25 feet (7620 mm) above grade unless the monolithic foundation system has been designed by a professional engineer and ample consideration has been given to the eccentric loading, foundation rotation and shear cracking at the slab/foundation interface.~~

**~~1821.1.7~~** ~~The minimum continuous monolithic footings specified in this section shall be reinforced as follows:~~

|  |  |
| --- | --- |
| **~~Reinforcing~~** | **~~Minimum Width Foundation (in.)~~** |
| ~~2 # 5 3 # 5 4 # 5~~ | ~~16" and 20" wide 24" and 30" wide 36" wide~~ |

|  |
| --- |
| ~~For SI: 1 inch = 25.4 mm.~~ |

**~~1821.1.8~~** ~~Where footings are 30 inches (762 mm) or more in width, cross bars designed to resist bending at the face of the foundation wall shall be provided.~~

**~~1821.1.9~~** ~~Equivalent areas in #4 reinforcing bars may be substituted for the sizes as specified in Section 1821.1.7.~~

**~~1821.1.10~~** ~~Splices in reinforcing bars shall be not less than 36 bar diameters and reinforcement shall be continuous around all corners and changes in direction. Continuity shall be provided at corners or changes in direction by bending the longitudinal steel around the corner 48 bar diameters or by adding matching reinforcing steel, which shall extend 48 bar diameters from each corner or change in direction. When three or more bars are required, the bars shall be held in place and alignment by transverse bars spaced not more than 4 feet (1219 mm) apart.~~

**~~1821.1.11~~** ~~The reinforcement for monolithic footings and other principal structural members in which concrete is deposited against the ground shall have not less than 3 inches (76 mm) of concrete between the reinforcement and the ground contact surface. If concrete surfaces after removal of the forms are to be exposed to the weather or be in contact with the ground, the reinforcement shall be protected with not less than 2 inches (51 mm) of concrete for bars larger than #5 and 11/2 inches (38 mm) for #5 or smaller bars.~~

**~~1821.1.12~~** ~~Excavations for continuous monolithic footings shall be cut true to line and grade and the sides of footings shall be formed, except where soil conditions are such that the sides of the excavation stand firm and square. Excavations shall be made to firm, clean bearing soil.~~

**~~1821.1.13~~** ~~Unless otherwise determined by rational analysis, monolithic footings shall have transfer reinforcement along the perimeter of the foundation. Said reinforcement shall be no less than #4 reinforcing steel bars spaced no greater than 12 inches (305 mm) on center and shall be no less than 5 feet (1524 mm) in length plus a standard ACI hook and shall be placed to transfer into the slab section commencing at a point no less than 3 inches (76 mm) from the edge form.~~

***Section 1822 High-Velocity Hurricane Zones— Pile Foundations. Modify section 1822 to read as shown:***

**SECTION 1822**

**HIGH-VELOCITY HURRICANE ZONES-**

**PILE FOUNDATIONS**

**RESERVED**

**~~1822.1~~** ~~Pile foundations shall be designed and installed on the basis of a geotechnical exploration which shall include field and/or laboratory tests.~~

**~~1822.1.1~~** ~~Piles used for the support of any building or structure shall be driven to a resistance and penetration in accordance with the plans and/or specifications as set forth herein.~~

**~~1822.1.2~~** ~~Piles may be jetted under the supervision of a professional engineer. Immediately after completion of jetting, piles shall be driven below the depth jetted to the required resistance, but not less than 1 foot (305 mm), or to nominal refusal whichever comes first. No jetting will be permitted that may be detrimental to existing adjacent structures or piles that have been driven.~~

**~~1822.1.3~~** ~~When isolated columns, piers and other loads are supported on piles, a minimum of three piles shall be used for such support unless lateral bracing is provided at the pile cap to insure stability. Should a pile group be loaded eccentrically so as to produce an overload on any pile more than 10 percent of the allowable load, footing straps or other approved methods shall be required to counteract the effect of eccentric loading.~~

**~~1822.1.4~~** ~~The minimum center-to-center spacing of piles shall be not less than twice the average diameter of round piles or 13/4 times the diagonal dimensions of rectangular piles but in no case less than 30 inches (762 mm). Piles supporting structural walls shall have dowels installed to offer sufficient resistance for lateral restraint of a grade beam.~~

**~~1822.1.5~~** ~~Nonfluid soil shall be considered as providing full lateral support against column action. The portion of a pile that extends through air, water, fluid soil or other unstable material shall be designed as a structural column. Soils having a consistency stiffer than fluid soil may be considered as capable of providing lateral support. Where cast-in-place piles are used reinforcement shall extend 10 feet (3048 mm) below the plane where the soil provides lateral restraint. Sufficient reinforcement for all types of piles shall be provided at the junction of the pile and pile cap or grade beam to make a suitable connection. Shells conforming to Section 1826.1 may be considered as reinforcement.~~

**~~1822.1.6~~** ~~Reinforced concrete caps shall be provided for all pile clusters and such caps shall extend laterally not less than 6 inches (152 mm) beyond the extreme pile surface and vertically not less than 4 inches (102 mm) below the pile butt. Pile caps may be omitted when piles are used to support grade beams, provided that the spacing of Section 1822.1.4 is complied with, and provided that the portions of the grade beams acting in place of the pile cap shall be computed by a recognized method of analysis to properly carry the loads.~~

**~~1822.1.7~~** ~~Piles shall be driven using an approved cushion block consisting of material arranged to provide transmission of hammer energy equivalent to one-piece hardwood with the grain parallel to the axis of the pile and enclosed in a metal housing to prevent its lateral deformation between the hammer ram and the top of the pile.~~

**~~1822.1.8~~** ~~Friction piles shall be driven to a minimum penetration of 12 feet (3658 mm) below the cutoff or the existing ground, whichever is the lower.~~

**~~1822.1.9~~** ~~Diesel hammers may be used for driving piles if provided with one of the following means of determining the energy of the hammer's blow.~~

**~~1822.1.10~~** ~~Closed-top diesel hammers shall be used with a rating instrument and charts to measure the equivalent WH energy per blow of the hammer. The equivalent WH energy as measured by the instrument shall be the ram's weight times the equivalent ram plus an added value obtained from the energy stored in the bounce chamber. The energy per blow shall be the equivalent WH energy for the closed-top diesel.~~

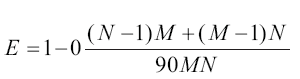
**~~1822.1.11~~** ~~Open-top diesel hammers shall be equipped with a ram stroke indictor rod that is striped in increments above the hammer body and fastened to the body of the hammer. The energy per blow for the open top diesel shall be computed as the ram's working stroke times the ram's weight.~~

**~~1822.1.12~~** ~~The load-bearing formula applicable for single-acting pile hammers shall be used to compute the bearing capacity of the driven pile.~~

**~~1822.1.13~~** ~~Followers shall be used only upon permission of the special inspector or engineer and only where necessary to effect installation of piles. A follower shall be of a size, shape, length, material and weight to permit driving the pile in the desired location and to the required depth and resistance without loss of hammer energy in the follower.~~

**~~1822.1.14~~** ~~Splices shall be avoided as far as practicable. Splices shall be constructed to provide and maintain true alignment and position of the component parts of the pile during installation and subsequent thereto. Splices shall develop the required strength of the pile.~~

**~~1822.1.15~~** ~~The safe capacity of a group of friction piles in plastic material may be determined by load testing the group to 150 percent of the proposed group load or by the formula given in Section 1822.2. When computed by formula, the allowable load for such a group shall be the allowable load for one pile times the number of piles in the group times the efficiency of the pile group determined as follows:~~



~~Where:~~

~~E = is the efficiency~~

~~S = the average spacing of the piles, inches~~

~~M = the number of rows~~

~~N = the number of piles in one row~~

~~D = the average diameter of the pile, inches~~

~~O = arc tan D /S , in degrees~~

**~~1822.1.16~~** ~~Types of piles that are not provided for in this section shall conform to the requirements herein for the type that it most nearly approximates, subject to such additional requirements as may be made by the building official.~~

**~~1822.1.17~~** ~~Pile driving hammers shall develop a minimum of 1 foot-pound of energy per pound of pile or mandrel, but not less than 7,000 foot-pounds of energy per blow.~~

**~~1822.1.18~~** ~~Piles may be driven with drop or gravity hammers provided the hammer shall weigh not less than 3,000 pounds (1362 kg) and the fall of the hammer shall not exceed 6 feet (1829 mm).~~

**~~1822.1.19~~** ~~Piles shall be driven with a variation of not more than 1/4 (6 mm) inch per foot from the vertical, or from the batter line indicted, with a maximum variation of the head of the pile from the position shown on the plans of not more than 3 inches (76 mm), subject to the provisions of Section 1822.1.3.~~

**~~1822.1.20~~** ~~The special inspector or engineer supervising the pile driving operations shall be required to keep an accurate record of the material and the principal dimensions of each pile; of the weight and fall of the hammer, if a single-acting hammer or drop hammer; the size and make, operating pressure, length of hose, number of blows per minute and energy per blow, if a double-acting hammer; together with the average penetration of each pile for at least the last five blows, and the grades at tip and cut-off. A copy of these records shall be filed with the building official and kept with the plans.~~

**~~1822.1.21~~** ~~Where piling must penetrate strata offering high resistance to driving or where jetting could cause damage, the inspector or supervising engineer may require that the piles be set in predrilled or punched holes. The equipment used for drilling or punching must be approved by the special inspector or engineer, and provided that all piles shall reach their final penetration by driving.~~

**~~1822.1.22~~** ~~The maximum load permitted on any driven pile shall not exceed 36 tons unless substantiated by a load test performed at the site, as set forth in Section 1829.~~

**~~1822.1.23~~** ~~The building official may require tests on any pile where performance is questionable.~~

**~~1822.1.24~~** ~~Piles shall be designed and driven to develop not less than 10 tons safe bearing capacity.~~

**~~1822.1.25~~** ~~In soils in which the installation of piles causes previously installed piles to heave, accurate level marks shall be put on all piles immediately after installation and all heaved piles shall be reinstalled to the required resistance.~~

**~~1822.1.26~~** ~~Piles shall not be driven closer than 2 feet (610 mm) nor jetted closer than 10 feet (3048 mm) to an existing building or structure unless approved by a special inspector or engineer.~~

**~~1822.2 Driving formula load.~~** ~~Subject to pile load limitations contained in Sections 1823.1.8 and 1824.1.2 and in the absence of pile load test data satisfactory to the building official, the load on a pile shall not exceed that computed from the following driving formula:~~

~~Drop Hammer:~~

|  |
| --- |
|  |

~~Single Acting Hammers:~~

|  |
| --- |
|  |

~~Double Acting Hammers:~~

|  |
| --- |
|  |

~~Or differential in which:~~

~~A = area of piston, square inches~~

~~p = pressure at the hammer, pounds per square inch~~

~~P = allowable total load, pounds~~

~~W = weight of striking part of hammer, pounds~~

~~H = height of fall of striking part of hammer, feet, or stroke, feet~~

~~S = average penetration per blow of not less than the five final blows~~

**~~TABLE 1823~~**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **~~SPECIES~~** | **~~COMPRESSION PARALLEL TO GRADE (psi)~~**~~4~~ | **~~BENDING (psi)~~**~~4~~ | **~~SHEAR HORIZ (psi)~~**~~4~~ | **~~COMP PERP TO GRAIN (psi)~~**~~4~~ | **~~MODULUS OF ELASTICITY~~** |
| ~~Pacific Coast     Douglas Fir~~~~1~~ ~~Southern Pine~~~~2~~ ~~Red Oak~~~~3~~ ~~Red Pine~~~~4~~ | ~~1,250 1,200 1,100 900~~ | ~~2,450 2,400 2,450 1,900~~ | ~~115 110 135 85~~ | ~~230 250 350 155~~ | ~~1,500,000 1,500,000 1,250,000 1,280,000~~ |
| ~~For SI: 1 pound per square inch = 0.0068 MPa.   1. Pacific Douglas Coast Fir values apply only to species as defined in ASTM Designation 01760-76, Standard Specification for Pressure Treatment of Timber Products. For faster design, use Douglas Fir-Larch design values.  2. Southern Pine values apply to Longleaf, Slash, Loblolly and Short Leaf Pines.  3. Red Oak values apply to Northern and Southern Red Oak.  4. Red Pine values apply to Red Pine grown in the United States.~~ | | | | |

***Section 1823 High-Velocity Hurricane Zones— Wood Piles. Modify section 1823 to read as shown:***

**SECTION 1823**

**HIGH-VELOCITY HURRICANE ZONES-**

**WOOD PILES**

**RESERVED**

**~~1823.1~~** ~~Woodpiles shall conform to ASTM D 25, Round Timber Piles.~~

**~~1823.1.1~~** ~~Untreated wood piles in all cases shall be cut off not higher than mean low water table and shall be capped with concrete.~~

**~~1823.1.2~~** ~~Timber piles used to support permanent structures shall be treated in accordance with this section unless it is established that the top of the untreated timber piles will be below lowest ground water level assumed to exist during the life of the structure.~~

**~~1823.1.3~~** ~~Preservative and minimum final retention shall be in accordance with AWPA C3.~~

**~~1823.1.4~~** ~~When timber piles are used in salt water, the treatment shall conform to AWPA MP-1, MP-2 or MP-4. Pile cutoffs shall be treated in accordance with AWPA M-4.~~

**~~1823.1.4.1~~** ~~All preservative-treated wood piles shall have a metal tag, brand or other preservative treatment identification mark.~~

**~~1823.1.4.2~~** ~~Such mark shall identify the producer, and/or the appropriate inspection agency, and treatment specifications or quality mark.~~

**~~1823.1.5~~** ~~Wood piles which support a structure over water may project above the water to such height as may be necessary for structural purposes, provided that such piles used to support structures other than open wharves, boat landings, and other similar light structures shall have been treated in accordance with Section 1823.1.2~~

**~~1823.1.6~~** ~~Wood piles shall be driven with a protective driving cap or ring when necessary to prevent brooming or splitting of the butt. When brooming or splitting occurs, such piles shall be cut back to solid wood before the final resistance to penetrations is measured.~~

**~~1823.1.7~~** ~~If required, when driving through or to hard material or to rock, wood piles shall be fitted with a metal protective driving cap shown satisfactory to the building official.~~

**~~1823.1.8~~** ~~The maximum allowable load on a round timber pile shall be determined in accordance with Section 1822.1.22, provided the maximum allowable stresses of timber are not exceeded.~~

**~~1823.1.8.1~~** ~~The allowable stresses for timber piles shall not exceed the values in Table 1823 except as modified by Part 6 of the National Design Specification for Wood Construction.~~

***Section 1824 High-Velocity Hurricane Zones— Precast Concrete Piles. Modify section 1824 to read as shown:***

**SECTION 1824**

**HIGH-VELOCITY HURRICANE ZONES-PRECAST CONCRETE PILES**

**RESERVED**

**~~1824.1~~** ~~Precast concrete piles shall be cast of concrete having a compressive strength of not less than 3,000 pounds per square inch (psi) (21 MPa) at the time of driving, and shall be reinforced with a minimum of four longitudinal steel bars having an area of not less than 1 percent nor more than 4 percent of the gross concrete area. All longitudinal bars shall be of uniform size and shall be tied by not less than #2 hoops spaced 8 inches (203 mm) in the body of the pile and not over 3 inches (76 mm) for the first 18 inches (437 mm) from both the butt and the tip. All reinforcement shall be protected by 2 inches (51 mm) or more of concrete, except that for piles subjected to the action of open water, waves or other severe exposure, a 3-inch (76 mm) protective covering shall be furnished in the zone of such exposure. For point bearing piles, the concrete area of the tip shall be not less than 75 percent of the area of the butt.~~

**~~1824.1.1~~** ~~All precast concrete piles shall have their date of manufacture and the lifting points clearly marked on the pile. Concrete piles shall not be driven until they have attained their full specification strength as verified by tests, nor shall the piles be removed from the forms until 50 percent of the specification strength has been attained. Piles shall not be transported nor driven until they have been cured not less than seven days for Type I cement and three days for Type III cement.~~

**~~1824.1.2~~** ~~In the absence of load tests, the maximum allowable load per pile shall not exceed the values set forth in Table 1824.~~

**~~TABLE 1824~~**

|  |  |
| --- | --- |
| **~~SIZE (INCHES)~~** | **~~MAXIMUM LOAD (TONS)~~** |
| ~~10 x 10 12 x 12 14 x 14~~ | ~~17 25 35~~ |
| ~~For SI: 1 inch = 25.4 mm.~~ |

***Section 1825 High-Velocity Hurricane Zones— Prestressed Precast Concrete Piles. Modify section 1825 to read as shown:***

**SECTION 1825**

**HIGH-VELOCITY HURRICANE ZONES-**

**PRESTRESSED PRECAST CONCRETE PILES**

**RESERVED**

~~1825.1 Prestressed precast concrete piles shall conform to Chapter 19 (High-Velocity Hurricane Zones) and to Sections 1822.1.1, 1822.2, 1824 and 1828 except as specifically detailed in this section.~~

~~1825.1.1 Prestressed concrete piles shall be cast of concrete having a compressive strength of not less than 5,000 psi (34 MPa) at time of driving and 3,000 psi (21 MPa) before transfer of the prestressing force. The prestressing elements shall not be stressed initially in excess of 75 percent of ultimate strength. The elements shall transfer a compressive stress to the concrete, after losses, of not less than 0.08 percent of the specified strength at driving. Under loads other than handling no tension will be permitted in the concrete.~~

~~1825.1.2 Longitudinal reinforcing shall be protected by 2 inches (51 mm) of concrete and shall be tied by #2 hoops or #5 AS&W gauge spirals spaced at 8 inches (203 mm) in the body of piling 14 inches (356 mm) or smaller or 9 inches (22 mm) in the body of piling 16 inches (76 mm) or larger and not over 3 inches (76 mm) for the first 18 inches (457 mm) from both the butt and the tip.~~

***Section 1826 High-Velocity Hurricane Zones— Cast-In-Place. Modify section 1826 to read as shown:***

**SECTION 1826**

**HIGH-VELOCITY HURRICANE ZONES-**

**CAST-IN-PLACE**

**RESERVED**

**~~1826.1~~** ~~Cast-in place concrete piles shall consist of a steel shell driven in intimate contact with the surrounding soil and left in place and filled with concrete. Steel shells may be uniformly tapered, step-tapered, cylindrical or a combination of such shapes and may be laterally corrugated, spirally corrugated, longitudinally fluted or plain.~~

**~~1826.1.1~~** ~~Pile shells and end closures shall be of sufficient strength and rigidity to permit their driving in keeping with the driving method used, and to prevent harmful distortion caused by soil pressures or the driving of adjacent piles until filled with concrete. A reduction of cross sectional area in excess of 15 percent shall be cause for rejection. The shells shall also be sufficiently water tight to exclude water during the placing of concrete.~~

**~~1826.1.2~~** ~~The minimum diameter shall be 8 inches.~~

**~~1826.1.3~~** ~~Concrete for cast-in-place piles shall develop a compressive strength of not less than 3,000 psi (21 MPa) in 28 days. The concrete shall be deposited in a continuous operation to insure a full-sized pile without voids or separation. Concrete shall be placed in the dry. The pile may be sealed by depositing concrete by tremie or other approved method.~~

**~~1826.1.4~~** ~~Splices of shell sections shall be designed to insure the alignment of the shells and develop the full strength of the shell station.~~

**~~1826.1.5~~** ~~The load on the shell shall not exceed 25 percent of the minimum average tensile yield strength of the steel multiplied by the area of the shell.~~

**~~1826.1.5.1~~** ~~Shells having a wall thickness of 0.119 inch (3 mm) or more may be considered as carrying part of the load.~~

**~~1826.1.5.2~~** ~~Adequate allowance for corrosion shall be considered in the design but not less than the outer inch of the shell thickness shall be deducted before computing the area of the shell considered as carrying load.~~

**~~1826.1.5.3~~** ~~The metal for the shells shall conform to the Standards of Welded and Seamless Steel Pipe Piles, Grade 2, ASTM A 252, for Hot-Rolled Carbon Steel Sheets and Strip of Structural Quality, ASTM A 570 and Carbon Structural Steel, Cold-Rolled Sheet, ASTM A 611.~~

**~~1826.1.5.4~~** ~~The yield strength used in design shall be that of the material in the fabricated shell.~~

**~~1826.1.6~~** ~~For friction piles, the allowable load shall be computed at the cross section located at a point two-thirds of the embedded length of the pile, in material providing suitable lateral support, measured upward from the tip. The load on the concrete shall not exceed 25 percent of the 28-day strength of the concrete multiplied by the concrete area.~~

**~~1826.1.7~~** ~~For end-bearing piles, the concrete area of the critical section shall be such that the unit stress on the concrete does not exceed 0.25 f ¢c under the pile load. The area of the shell and the critical section of the concrete shall be taken at the elevation where the pile enters the stratum furnishing and bearing.~~

***Section 1827 High-Velocity Hurricane Zones— Rolled Structural Shapes. Modify section 1827 to read as shown:***

**SECTION 1827**

**HIGH-VELOCITY HURRICANE ZONES-**

**ROLLED STRUCTURAL SHAPES**

**RESERVED**

**~~1827.1~~** ~~Rolled structural steel piles shall conform to the Standards for general requirements for Hot-Rolled and Cold-Finished Carbon and Alloy Steel Bars, ASTM A 29, and Carbon Steel Bars Subject to Mechanical Property Requirements, ASTM A 306, except that copper may be added to increase the corrosion-resistant properties of the material.~~

**~~1827.1.1~~** ~~Sections of such pile of H form shall have flange projections not exceeding 14 times the thickness of web or flange and total flange width not less than 85 percent of the depth of the section.~~

**~~1827.1.2~~** ~~No section shall have a nominal thickness of metal less than 3/8 inch (10 mm).~~

**~~1827.1.3~~** ~~For end-bearing piles, the allowable stress may be determined on the basis of an allowable stress of 25 percent of the yield value of the steel.~~

**~~1827.1.4~~** ~~In the absence of adequate corrosion protection, 1/16 inch (1.6 mm) shall be deducted from each face in determining the area of the pile section.~~

**~~1827.1.5~~** ~~The allowable load, when used as friction piles, shall be determined by load tests at the site.~~

***Section 1828 High-Velocity Hurricane Zones— Special Piles Or Special Conditions. Modify section 1828 to read as shown:***

**SECTION 1828**

**HIGH-VELOCITY HURRICANE ZONES-**

**SPECIAL PILES OR SPECIAL CONDITIONS**

**RESERVED**

**~~1828.1~~** ~~The use of types of piles or conditions not specifically covered herein may be permitted, subject to the approval of the building official, upon submission of acceptable test data, calculations or other information relating to the properties and load-carrying capacity of such piles.~~

***Section 1829 High-Velocity Hurricane Zones— Load Tests on Piles. Modify section 1829 to read as shown:***

**SECTION 1829**

**HIGH-VELOCITY HURRICANE ZONES-**

**LOAD TESTS ON PILES**

**RESERVED**

**~~1829.1~~** ~~Single piles tested shall be loaded to at least twice the desired design load and should pile groups be tested, the test load shall be not less than 11/2 times the total desired load for the group.~~

**~~1829.1.1~~** ~~The apparatus for applying known vertical loads to the top of the pile shall maintain constant load under increasing settlement, and shall apply the loads in such a way that no lateral forces or impact will occur. Hydraulic jacks when used shall be equipped with a calibrated pressure gauge. Uplift piles used to provide the jacking resistance shall be a sufficient distance from the test pile so as not to influence its behavior under test.~~

**~~1829.1.2~~** ~~The test load shall be applied in increments of not more than 25 percent of the design load until the total test load has been applied.~~

**~~1829.1.3~~** ~~The method for determining vertical movement shall be subject to the approval of the building official. Readings shall be sufficient in number to define the time settlement and rebound curve.~~

**~~1829.1.4~~** ~~Each load increment shall be maintained for a minimum of 1 hour, and until the rate of settlement is less than 0.01 inch (.25 mm) per hour. The total load shall be maintained until settlement does not exceed 0.01 (.25 mm) inch in 24 hours. Settlement readings shall be taken at regular intervals during the test period.~~

**~~1829.1.5~~** ~~After the maximum load has remained on the pile for 24 hours and final settlement readings have been taken, the pile shall be unloaded in 50-percent decrements of design load. Rebound readings shall be taken at regular intervals during the unloading period, and final reading taken approximately 12 hours after the entire load has been removed.~~

**~~1829.1.6~~** ~~The maximum allowable pile load shall be one-half of that load which causes a net settlement of not more than 0.005 inch (.13 mm) per ton of test load, a gross settlement of 1 inch (25 mm) (whichever is less) or a disproportionate increase in settlement.~~

**~~1829.1.7~~** ~~Control test piles shall be tested in accordance with ASTM D 1143, Method of Testing Piles Under Axial Compressive Load. If quick load test procedures are used, the applied test load shall be not less than three times the working pile capacity and in accordance with the standard.~~

***Section 1830 High-Velocity Hurricane Zones— Foundation Walls and Grade Beams. Modify section 1830 to read as shown:***

**SECTION 1830**

**HIGH-VELOCITY HURRICANE ZONES-**

**FOUNDATION WALLS AND GRADE BEAMS**

**RESERVED**

**~~1830.1~~** ~~Exterior foundation walls of buildings, where the character of the soil is such that allowable soil loads of 1,500 pounds per square foot (psf) (81 kN/m2) or less are used for design, shall be poured-in-place reinforced concrete from the footing to the bottom of the first or ground floor construction.~~

**~~1830.1.1~~** ~~Exterior foundation walls of building, where the character of the soil is such that allowable soil loads of more than 1,500 psf (71 kN/m2) are used for design, may be of unit masonry or concrete on continuous concrete footings.~~

**~~1830.1.2~~** ~~Under the exterior walls of buildings of Type V construction, in locations where extreme dampness exists, the building official may approve isolated piers, provided such piers are as otherwise set forth in Section 1823.1.1.~~

**~~1830.2~~** ~~Detailed requirements.~~

**~~1830.2.1~~** ~~The thickness of the foundation wall shall be not less than 8 inches (203 mm).~~

**~~1830.2.2~~** ~~Where wood joist construction is used for the first or ground floor, the thickness of the exterior foundation walls shall be not less than 8 inches (203 mm), plus 4 inches (102 mm) for the bearing of joists.~~

**~~1830.2.3~~** ~~Foundations of unit masonry supporting joists shall be capped with 4 inches (102 mm) of concrete.~~

**~~1830.3~~** ~~Interior bearing walls. Interior foundation walls shall be of the material and design as specified in Section 1830.1 except as follows.~~

**~~1830.3.1~~** ~~Interior foundation walls that support stud walls shall be exempted from the additional 4 inches (102 mm) of width required for the bearing of joists.~~

**~~1830.3.2~~** ~~The use of isolated piers, girders and beams may be substituted for interior foundation walls when designed by a registered architect and/or engineer.~~

**~~1830.4~~** ~~Grade beams.~~

**~~1830.4.1~~** ~~Grade beams supporting loads between piles or piers shall be reinforced concrete or structural steel protected by 2 inches (51 mm) of concrete cover.~~

**~~1830.4.2~~** ~~Grade beams shall be the thickness of the wall they support but never less than 8 inches (203 mm) nor less than set forth for foundation walls herein.~~

**~~1830.4.3~~** ~~Grade beams shall be suitably designed and reinforced around access openings and vents.~~

***Section 1831 High-Velocity Hurricane Zones— Grades Under Buildings. Modify section 1831 to read as shown:***

**SECTION 1831**

**HIGH-VELOCITY HURRICANE ZONES-**

**GRADES UNDER BUILDINGS**

**RESERVED**

**~~1831.1~~** ~~The grade of the ground under buildings of joist or suspended slab construction having no basements shall not be lower than the lowest surrounding finished lot area grade in order to prevent the accumulation and standing of ground, storm or tide water under such buildings unless provided with other approved means of drainage.~~

**~~1831.1.1~~** ~~Plans for future raising of lots shall be taken into account in planning the grade of the ground under such buildings.~~

**~~1831.1.2~~** ~~The building official may establish grades under such buildings based on present or future street or sidewalk grades abutting the property.~~

***Section 1832 High-Velocity Hurricane Zones— Retaining Walls. Modify section 1832 to read as shown:***

**SECTION 1832**

**HIGH-VELOCITY HURRICANE ZONES-RETAINING WALLS**

**RESERVED**

**~~1832.1~~** ~~All walls exceeding 24 inches (610 mm) in height built to retain or support earth, or subject to pressure from adjoining earth, and any surcharge shall be designed to resist the pressure to which they are subjected, including water pressure that may exist.~~

***Section 1833 High-Velocity Hurricane Zones— Seawalls And Bulkheads. Modify section 1833 to read as shown:***

**SECTION 1833**

**HIGH-VELOCITY HURRICANE ZONES-SEAWALLS AND BULKHEADS**

**RESERVED**

**~~1833.1~~** ~~All dredging, filling, excavation and waterfront construction such as docks, piers, wharves, bridges, groins, jetties, moles, breakwaters, seawalls, revetments, causeways, artificial nourishment of beaches or other deposition or removal of material in all water areas within the area of jurisdiction of this code shall be planned and designed by a professional engineer, except as noted in Section 1833.2, in accordance with this code and the applicable standards and requirements of the administrative authority.~~

**~~1833.2~~** ~~The requirement for professional design will not be required by the building official for bulkheads, docks, piers and similar structures constructed in conjunction with private residences on lakes, private canals and similar water frontage not subject to wind, wave or tidal action; do not involve unusual soil conditions, slopes or unstable soil and are not part of a foundation or support for an above-grade structure.~~

***Section 1834 High-Velocity Hurricane Zones— Soil Improvement. Modify section 1834 to read as shown:***

**SECTION 1834**

**HIGH-VELOCITY HURRICANE ZONES-SOIL IMPROVEMENT**

**RESERVED**

**~~1834.1~~** ~~The application of soil improvement techniques shall comply with this section.~~

**~~1834.1.1~~** ~~Methods of soil improvement for a specific site shall be determined by a registered professional engineer, hereinafter referred to as the geotechnical engineer, and such methods shall provide for field testing as required herein.~~

**~~1834.1.2~~** ~~A permit shall be required prior to the commencement of any soil improvement, and no building permit shall be issued until it has been determined that adequate bearing capacity has been obtained for the foundation, and the requirements of this section have been satisfied.~~

**~~1834.2~~** ~~Limits on application.~~

**~~1834.2.1~~** ~~Soil improvement shall not be permitted where subsurface conditions consist of zones of organic materials of sufficient quality above or below the ground water table which cannot be dispersed or displaced to levels not exceeding 5-percent dry weight of organic content in any undisturbed sample.~~

**~~1834.2.2~~** ~~Dynamic compaction, vibrocompaction, preloading, surcharging or other similar methods of soil improvements shall not be permitted near or within coastal areas subject to storm surge, scour or other forms of water erosion without suitable protection provided for the building foundation.~~

**~~1834.3~~** ~~Required testing.~~

**~~1834.3.1~~** ~~A rational program of field tests and soil analyses shall be part of the soil improvement treatment.~~

**~~1834.3.2~~** ~~Such tests shall determine the soil characteristics after treatment, and the results of the tests shall demonstrate whether the subsurface improvement has increased the bearing capacity of the soil to that which is capable of safely supporting the proposed construction.~~

**~~1834.3.3~~** ~~The testing shall be performed in accordance with the provisions of ASTM D 1586, Standard Penetration Test; ASTM D 3441, Static Cone Soundings; or by Menard Pressuremeter; Dilatometer or other on-site tests recognized by the industry.~~

**~~1834.3.4~~** ~~The test results shall be used to determine the achieved bearing capacity and the anticipated settlement.~~

**~~1834.4~~** ~~Requirements for acceptance. The efficacy of any application of soil improvement techniques shall be verified by appropriate calculations, testing and documentation as required in this section.~~

**~~1834.4.1~~** ~~All organics, including any organic lens, shall be displaced by the injection of sand or other suitable fill material, or otherwise dispersed in accordance with the provisions of this section, to levels not exceeding 5 percent by weight of organic content in any undisturbed sample.~~

**~~1834.4.2~~** ~~Complete documentation of required tests shall be required, and shall include as a minimum, but shall not be limited to:~~

~~1. A description of the stratigraphy and densification required and~~

~~2. Foundation bearing capacity and settlement analysis performed by an independent testing laboratory.~~

~~3. The anticipated settlement potential under superimposed loads shall be acknowledged and accepted by the engineer of record in writing prior to issuance of a building permit.~~

~~4. The results of testing to determine subsurface conditions shall be retained by the geotechnical engineer and submitted to the building official upon request.~~

**Chapter 19 - Concrete**

***Section 1901 General. Change Section 1901.4 to read as shown:***

**1901.4 Special inspection.** Reserved. ~~The~~ *~~special inspection~~* ~~of concrete elements of buildings and structures and concreting operations shall be as required by Chapter 17.~~

***Section 1908 – Anchorage to Concrete – Allowable Stress Design. Change Section 1908.4 to read as shown*:**

**1908.4 Increase in allowable load.** Increase of the values in Table 1908.2 by one-third is permitted where the provisions of Section 1605.3.2 permit an increase in allowable stress for wind loading.

***Change Section 1908.5 to read as shown:***

**1908.5 Increase for special inspection.** Reserved. ~~Where~~ *~~special inspection~~* ~~is provided for the installation of anchors, a 100-percent increase in the allowable tension values of Table 1908.2 is permitted. No increase in shear value is permitted~~.

***Section 1913 – Special Wind Provisions for Concrete. Add Section 1913 to read as shown:***

**SECTION 1913**

**SPECIAL WIND PROVISIONS FOR CONCRETE**

**1913.1 Reinforced concrete components.** The design and construction of reinforced concrete components for buildings sited in areas where the ultimate design wind speed, Vult, is greater than 115  (45 m/s) in accordance with Figure 1609A, 1609B, or 1609C shall conform to the requirements of ACI 318 or with Section 1609.1.1, Exception 1, as applicable, except as modified in this section.

**1913.2 Insulated concrete form wall.** Insulated concrete form (ICF) wall construction for buildings shall be in accordance with ACI 318 or with Section 1609.1.1, Exception 1, as applicable.

**1913.3 Gable endwalls.**

**1913.3.1 General.** Gable endwalls shall be structurally continuous between points of lateral support.

**1913.3.2 Cathedral endwalls.** Gable endwalls adjacent to cathedral ceilings shall be structurally continuous from the uppermost floor to ceiling diaphragm or to the roof diaphragm.

***Sections 1914 – 1916. Add Sections 1914 – 1916 to read as shown:***

**SECTIONS 1914 - 1916**

**RESERVED**

***Section 1917 – Lightweight Insulating Concrete. Add Section 1917 to read as shown:***

**SECTION 1917**

**LIGHTWEIGHT INSULATING CONCRETE ROOFS**

**1917.1   Lightweight insulating concrete.** Material produced with or without aggregate additions to portland cement, water and air to form a hardened material possessing insulating qualities, which, when oven dried shall have a unit weight no greater than 50 pcf (801 kg/m3).

**1917.1.1   Aggregate lightweight insulating concrete.** Insulating concrete formulated predominantly with perlite or vermiculite aggregate having a minimum compressive strength of 125 psi (861.8 kPa) when tested in compliance with [ASTM C 495](javascript:vo();).

**1917.1.2   Cellular lightweight insulating concrete.** Insulating concrete formulated by mixing a hydrated cementitious matrix around non-interconnecting air cells created by the addition of preformed foam formed from hydrolyzed proteins or synthetic surfactants. The cured cellular lightweight insulating concrete shall have minimum compressive strength of 160 psi (1103 kPa) when tested in compliance with [ASTM C 495](javascript:vo();) and [C 796](javascript:vo();).

**1917.1.3   Cellular/aggregate (hybrid) lightweight insulating concrete.** Insulated concrete formulated by combining preformed foam with low density aggregates to impart properties of both aggregate and cellular lightweight insulating concrete. It shall have a minimum compressive strength of 200 psi (1379 kPa) when tested in compliance with [ASTM C 495](javascript:vo();) and [C 796](javascript:vo();).

**1917.2   Inspection.**

**1917.2.1**Application of all lightweight insulating concrete roof decks shall be by applicators approved by the lightweight insulating concrete deck manufacturer. Product Approval shall be required for all lightweight insulating concrete systems.

**1917.2.2** The permit holder shall notify the building official 48 hours prior to the pouring of lightweight insulating concrete.

**1917.2.3** The permit holder shall make available to the building official a job log with the following minimum items.

1. Cast density recordings/hour.

2. Product evaluation for application.

3. Date and job locations identified.

4. Results of any field test conducted.

**1917.2.4** Once the roof deck system can support foot traffic, the building official shall have clear access and clear path at his option for inspection of lightweight insulating concrete.

**1917.3   Testing.** The building official may require tests of the lightweight insulating concrete to confirm the fastener withdrawal resistance, compressive strength or drainage ability.

**1917.3.1** Existing roof assemblies to receive lightweight insulating concrete other than galvanized G-90 steel deck or structural concrete deck shall be tested for uplift for adhesion to the substrate to confirm compliance with design pressure.

**1917.4   Materials and limitations of use.** Lightweight insulating concrete, in conjunction with galvanized formed steel sheets, shall not be used as a roof deck in areas where highly corrosive chemicals are used or stored.

**1917.4.1**Lightweight insulating concrete shall be poured over bottom slotted galvanized (G-90) steel decking as follows; cellular, 0.5 percent open; hybrid, 0.75 percent open, aggregate 1.5 percent open. No lightweight insulating concrete shall be poured over a painted or non-galvanized steel deck.

1. Lightweight insulating concrete over structural concrete slabs, twin tees, precast units or other non-venting substrates shall be vented to allow the escape of excess moisture.

**1917.4.2** Minimum thickness of lightweight insulating concrete shall be 2 inches (51 mm) over the top plane of the substrate unless otherwise specified in the Product Approval. Lightweight insulating concrete shall be of sufficient thickness to receive the specified base ply fastener length.

**1917.4.3** Galvanized coatings of formed steel sheets shall be in accordance with [ASTM A 525](javascript:vo();) with a minimum coating designation of G-90. Base steel shall conform to [ASTM A 446](javascript:vo();), Grade A, B, C, D or greater and [ASTM A 611](javascript:vo();) C, D or E.

**1917.4.4** Chemical admixtures shall be in compliance with [ASTM C 494](javascript:vo();). Calcium chloride or any admixture containing chloride salts shall not be used in insulating concrete. Fiber reinforcement may be used to control cracking. Mineral admixtures shall conform to [ASTM C 618](javascript:vo();).

**1917.4.5** Vermiculite or perlite shall be in compliance with [ASTM C 332](javascript:vo();), Group I. Foam concentrates shall be in compliance with [ASTM C 796](javascript:vo();) and [ASTM C 869](javascript:vo();).

**1917.4.6** Mixing, placing and finishing shall be in compliance with the deck system Product Approval. Slurry coating, two-density casting and double casting shall be acceptable per the specific manufacturer's recommendations.

**1917.4.7** If the lightweight insulating concrete deck is to receive Product Approval for a direct-adhered roofing system, the deck surface shall be prepared to the requirements set forth in the roof system Product Approval.

**1917.4.8** All base ply fasteners for use in lightweight insulating concrete roof decks shall have a Product Approval for use with the specific lightweight insulating concrete roof system in compliance with manufacturer's recommendations and the design pressure of [Section 1609](http://ecodes.citation.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2012052906131108271&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b200v10/st_fl_st_b200v10_19.htm&pseudo=UN1%2C%2CST%2CSTF2012020910284611630%2Cb=1609%2C#b=1609) (Section 1620 for the High Velocity Hurricane Zone).

**1917.4.9** The lightweight insulating concrete fastener withdrawal shall have a minimum resistance for new pours of

1. 60 pounds (267 N) in 28 days when the fastener is installed and allowed to age in the concrete.

2. 40 pounds (178 N) at time of roofing.

**1917.4.10** Insulation board with lightweight insulating concrete shall conform to Type I expanded polystyrene insulation as defined in [ASTM C 578](javascript:vo();).

1. Packaged insulation board delivered to the job site shall comply with the provisions of [Section 2603.2](http://ecodes.citation.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2012052906131108271&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b200v10/st_fl_st_b200v10_19.htm&pseudo=UN1%2C%2CST%2CSTF2012020910320111697%2Cb=2603%2C(2)#b=2603~(2))

2. Installation of insulating board in conjunction with lightweight insulating concrete shall comply with uplift requirements set forth in [Section 1609](http://ecodes.citation.com/cgi-exe/cpage.dll?pg=x&rp=/pseudo.htm&sid=2012052906131108271&aph=0&cid=iccf&uid=iccf0002&clrA=005596&clrV=005596&clrX=005596&ref=/indx/ST/fl/st/b200v10/st_fl_st_b200v10_19.htm&pseudo=UN1%2C%2CST%2CSTF2012020910284611630%2Cb=1609%2C#b=1609) (Section 1620 for the High Velocity Hurricane Zone). Insulation panels shall be placed in a minimum 1/8-inch (3.2 mm) slurry of insulating concrete while the material is still in a plastic state. The insulating concrete shall be cast over the insulation boards according to the insulating concrete manufacturer's Product Approval. Insulation panels shall be provided with holes and/or slots for keying and venting.

**1917.4.11** Reinforcing mesh shall be provided as required to meet fire-rating and/or special structural design requirements. Refer to a specific Product Approval for the specific requirements applicable to the product being installed.

***Section 1919 High-Velocity Hurricane Zones— General. Modify section 1919 to read as shown:***

**SECTION 1919**

**HIGH-VELOCITY HURRICANE ZONES—**

**GENERAL**

**RESERVED**

**~~1919.1 Scope.~~** ~~This section prescribes requirements for reinforced concrete in construction regulated by this code.~~

**~~1919.2 Application.~~** ~~Reinforced concrete shall be of the materials, proportions strength and consistency as set forth in this section and shall be designed by methods admitting of rational analysis according to established principles of mechanics.~~

**~~1919.3 Requirements.~~** ~~All structures of reinforced concrete, including prestressed concrete, shall be designed and constructed in accordance with the provisions of ACI 318 as adopted herein.~~

**~~1919.4 Workmanship.~~** ~~Concrete construction shall be in conformance with the tolerance, quality and methods of construction set forth in Section 1920.~~

***Section 1920 High-Velocity Hurricane Zones— Standards. Modify section 1920 to read as shown:***

**SECTION 1920**

**HIGH-VELOCITY HURRICANE ZONES —**

**STANDARDS**

**RESERVED**

**~~1920.1~~** ~~The following standards are hereby adopted as part of this code as set forth in Chapter 35 of this code.~~

**~~1920.2~~** ~~American Concrete Institute (ACI).~~

~~1. Standard Tolerances for Concrete Construction and Materials, ACI 117.~~

~~2. Specifications for Structural Concrete for Buildings, ACI 301.~~

~~3. Manual of Standard Practice for Detailing Reinforced Concrete Structures, ACI 315.~~

~~4. Building Code Requirements for Reinforced Concrete, ACI 318.~~

~~5. Recommended Practice for Concrete Formwork, ACI 347.~~

~~6. Recommended Practice for Shotcreting, ACI 506.~~

~~7. Specification for Materials, Proportioning, and Application of Shotcrete, ACI 506.2.~~

~~8. Deformed and Plain Billet Steel Bars for Concrete Reinforcement, ASTM A615, including S1.~~

**~~1920.3~~** ~~American National Standards Institute (ANSI)/American Society of Civil Engineers (ASCE).~~

~~1. Specifications for the Design and Construction of Composite Slabs and Commentary on Specifications for the Design and Construction of Composite Slabs, ANSI/ASCE 3.~~

~~2. Guideline for Structural Assessment of Existing Buildings, ANSI/ASCE 11.~~

**~~1920.4~~** ~~American Society for Testing Materials (ASTM).~~

~~1. Deformed and Plain Billet Steel Bars for Concrete Reinforcement, ASTM A 615, including S1.~~

~~2. Testing Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation, ASTM C 1077.~~

***Section 1921 High-Velocity Hurricane Zones— Definitions. Modify section 1921 to read as shown:***

**SECTION 1921**

**HIGH-VELOCITY HURRICANE ZONES—**

**DEFINITIONS**

**RESERVED**

**~~1921.1~~** ~~The following definitions apply to the provisions of Sections 1919 through 1929.~~

**~~PLAIN CONCRETE.~~** ~~Concrete that is either unreinforced or contains less reinforcement than the minimum amount specified for reinforced concrete.~~

**~~REINFORCED CONCRETE.~~** ~~Concrete reinforced with no less than the minimum amount required by ACI 318, prestressed or non-prestressed, and designed on the assumption that the two materials act together in resisting forces.~~

**~~PRESTRESSED CONCRETE.~~** ~~Reinforced concrete in which internal stresses have been introduced to reduce potential tensile stresses in concrete resulting from loads, The term prestressed concrete refers to pretensioned concrete in which the reinforcing is tensioned before hardening of the concrete, to postensioned concrete in which the reinforcing is tensioned after hardening of the concrete, or combinations of both pretensioning and posttensioning.~~

**~~PRECAST CONCRETE.~~** ~~Plain or reinforced concrete elements cast elsewhere than their final position in a structure.~~

**~~SHOTCRETE.~~** ~~Mortar or concrete pneumatically projected at high velocity onto a surface.~~

***Section 1922 High-Velocity Hurricane Zones— Materials. Modify section 1922 to read as shown:***

**SECTION 1922**

**HIGH-VELOCITY HURRICANE ZONES—**

**MATERIALS**

**RESERVED**

**~~1922.1 Cements.~~** ~~Cements shall conform to one of the following specifications for portland cement as set forth in Chapter 35.~~

~~1. Portland Cement, ASTM C 150.~~

~~2. Blended Hydraulic Cements, ASTM C 595, excluding Types S and SA, which are not intended as principal cementing constituents of structural concrete.~~

**~~1922.2~~** ~~Aggregates for concrete shall conform to one of the following specifications as set forth in Chapter 35 of this code or Section 1922.2.1.~~

~~1. Concrete Aggregates, ASTM C 33.~~

~~2. Lightweight Aggregates for Structural Concrete, ASTM C 330.~~

**~~1922.2.1~~** ~~Gradation of locally produced sand and crushed rock aggregate shall be as follows:~~

|  |  |  |
| --- | --- | --- |
| ~~COARSE AGGREGATE~~ | | |
| ~~Percent Passing~~ | | |
| ~~1~~~~1~~~~/~~~~2~~ ~~inches~~ | ~~sieve~~ | ~~100~~ |
| ~~1 inches~~ | ~~sieve~~ | ~~95 - 100~~ |
| ~~1/2 inches~~ | ~~sieve~~ | ~~25 - 60~~ |
| ~~#4~~ | ~~sieve~~ | ~~0 - 10~~ |
| ~~#8~~ | ~~sieve~~ | ~~0 - 5~~ |
| ~~FINE AGGREGATE~~ | | |
| ~~Percent Passing~~ | | |
| ~~3/8 inches sieve~~ | ~~100~~ |  |
| ~~#4~~ | ~~sieve~~ | ~~90 - 100~~ |
| ~~#8~~ | ~~sieve~~ | ~~70 - 95~~ |
| ~~#16~~ | ~~sieve~~ | ~~50 - 85~~ |
| ~~#30~~ | ~~sieve~~ | ~~30 - 70~~ |
| ~~#50~~ | ~~sieve~~ | ~~10 - 45~~ |
| ~~#100~~ | ~~sieve~~ | ~~0 - 10~~ |

**~~1922.2.2~~** ~~Aggregates failing to meet ASTM C 33, ASTM C 330 or the above special gradation but which have been shown by special test or actual service to produce concrete of adequate strength and durability may be used when certified by the engineer.~~

**~~1922.2.3~~** ~~Aggregates shall be quarried or washed in fresh water and shall contain not more than 1/20 of 1-percent salt by weight.~~

**~~1922.3~~** ~~Water used in mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials or other substances that may be deleterious to concrete or reinforcement.~~

**~~1922.3.1~~** ~~Mixing water for concrete, including that portion of mixing water contributed in the form of free moisture on aggregates, shall not contain deleterious amounts of chloride ion.~~

**~~1922.4 Reinforcement.~~**

**~~1922.4.1~~** ~~Deformed reinforcement shall conform to one of the specifications as set forth in Chapter 35, except as provided in Section 3.5 of ACI 318.~~

**~~1922.4.2~~** ~~Prestressing tendons shall conform to one of the specifications as set forth in Chapter 35.~~

**~~Exception:~~** ~~Wire strands and bars not specifically listed in ASTM A 421, A 416, or A 722 may be used provided they conform to minimum requirements of these specifications and do not have properties that make them less satisfactory than those listed in ASTM A 416, A 421 or A 722.~~

**~~1922.4.3~~** ~~Reinforcement consisting of structural steel, steel pipe or steel tubing may be used as specified in ACI 318.~~

**~~1922.4.4~~** ~~All welding of reinforcement shall conform to the Structural Welding Code - Reinforcing Steel, AWS D1.4, as set forth in Chapter 35.~~

**~~1922.4.5~~** ~~Reinforcement to be welded shall be indicated on the drawings, and welding procedures to be used shall be specified. ASTM steel specifications, except ASTM A 706, shall be supplemented to require a report of material properties necessary to conform to welding procedures specified in AWS D1.4.~~

**~~1922.4.6~~** ~~Deformed reinforcement may be galvanized or epoxy-coated in accordance with the Specifications for Zinc-Coated (galvanized) Bars for Concrete reinforcement, ASTM A 767 or the Specification for Epoxy-Coated Bars, ASTM A 775. Zinc or epoxy-coated reinforcement shall conform to ASTM A 615, A 616 (S1), A 617 or A 706.~~

**~~1922.5 Admixtures.~~**

**~~1922.5.1~~** ~~Admixtures to be used in concrete shall conform to one of the specifications set forth in Chapter 35.~~

**~~1922.5.2~~** ~~An admixture shall be shown capable of maintaining essentially the same composition and performance throughout the work as the product used in establishing concrete proportions.~~

**~~1922.5.3~~** ~~Admixtures containing chloride ions shall not be used in concrete if their use will produce a deleterious concentration of chloride ion in the mixing water.~~

**~~1922.6 Test of materials.~~**

**~~1922.6.1~~** ~~The building official, or his or her authorized representative, shall have the right to order the test of any material entering into concrete or reinforced concrete to determine its suitability for the purpose; to order reasonable tests of the concrete from time to time to determine whether the materials and methods in use are such as to produce concrete of the necessary quality; and to order the test under load of any portion of a completed structure when conditions have been such as to leave doubt as to the adequacy of the structure to serve the purpose for which it is intended.~~

**~~1922.6.2~~** ~~Materials shall be tested and of concrete shall be tested in accordance with applicable standards of ASTM International as listed in Chapter 35. Tests shall be made by an approved testing laboratory and results of such tests shall be submitted to the building official. Approved testing laboratories shall comply with ASTM C 1077.~~

**~~1922.6.3~~** ~~A complete record of tests of materials and of concrete shall be available to the building official for inspection during progress of work and for five years after completion of the project, and shall be preserved by the inspecting engineer or architect for that purpose.~~

**~~1922.6.4~~** ~~If doubt develops concerning the safety of a structure or member, the building official may order a structural strength investigation by analysis or by means of load tests, or by a combination of analyses and load test as set forth in Chapter 20 of ACI 318.~~

***Section 1923 High-Velocity Hurricane Zones— Concrete Quality. Modify section 1923 to read as shown:***

**SECTION 1923**

**HIGH-VELOCITY HURRICANE ZONES—**

**CONCRETE QUALITY**

**RESERVED**

**~~1923.1 General.~~**

**~~1923.1.1~~** ~~Concrete shall be proportioned and produced to provide an average compressive strength sufficiently high to minimize the frequency of strength test below the specified compressive strength of concrete, f ¢c .~~

**~~1923.1.2~~** ~~Requirements for f ¢c shall be based on tests of cylinders made and tested as prescribed in Section 1923.2.2.3.~~

**~~1923.1.3~~** ~~Unless otherwise specified, f ¢c shall be based on 28-day tests. If other than 28-day tests are called for, f ¢c shall be indicated in design drawings or specifications.~~

**~~1923.1.4~~** ~~Design drawings shall show the specified compressive strength of concrete, f ¢c for which each part of the structure is designed.~~

**~~1923.2 Evaluation and acceptance concrete.~~**

**~~1923.2.1 Frequency of testing.~~**

**~~1923.2.1.1~~** ~~The building official may require a reasonable number of tests to be made during the progress of the work, or may promulgate and set forth in writing such reasonable rules for requiring tests to be made by an approved laboratory as he may consider necessary to insure compliance with this code.~~

**~~1923.2.1.2~~** ~~Not less than three specimens shall be made for each standard test.~~

**~~1923.2.1.3~~** ~~Samples for strength of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 150 cubic yard (4.3 m3) of concrete, nor less than once for each 5,000 square feet (465 m2) of surface area for slabs or walls.~~

**~~1923.2.1.4~~** ~~On a given project, if total volume of concrete is such that frequency of testing required by Section 1923.2.1.1 would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.~~

**~~1923.2.1.5~~** ~~Test cylinders taken on truck-mixed concrete shall be taken at the approximate one-quarter point of the load.~~

**~~1923.2.1.6~~** ~~The age for strength tests shall be 28 days, or where specified, at the earlier age at which the concrete is to receive its full working load.~~

**~~1923.2.2 Laboratory cured specimens.~~**

**~~1923.2.2.1~~** ~~A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 28 days or at a test age designated for determination of f ¢c .~~

**~~1923.2.2.2~~** ~~Samples of strength tests shall be taken in accordance with the Method of Sampling Fresh Concrete, ASTM C 172, as set forth in Chapter 35.~~

**~~1923.2.2.3~~** ~~Cylinders for strength tests shall be molded and laboratory-cured in accordance with the Method of Making and Curing Concrete Test Specimens in the Field, ASTM C 31, as set forth in Chapter 35 of this code, and tested in accordance with the Method of Test for Compressive Strength of Cylindrical Concrete Specimens, ASTM C 39, as set forth in Chapter 35.~~

**~~1923.2.2.4~~** ~~The strength level of an individual class of concrete shall be considered satisfactory if both of the following requirements are met:~~

~~1. Average of all sets of three consecutive strength tests equal or exceed f ¢c .~~

~~2. No individual strength test (average of 2 cylinders) falls below f ¢c by more than 500 psi (3448 kPa).~~

**~~1923.2.2.5~~** ~~If any of the requirements of Section 1923.2 are not met, steps shall be taken to increase the average of subsequent strength test results. Requirements of Section 1923.2.4 shall be observed if any individual strength test falls below f ¢c by more than 500 psi (3448 kPa).~~

**~~1923.2.3 Field cured specimens.~~**

**~~1923.2.3.1~~** ~~The building official may require strength tests of cylinders cured under field conditions to check adequacy of curing and protection of concrete in the structure.~~

**~~1923.2.3.2~~** ~~Field-cured cylinders shall be cured under field conditions in accordance with Section 7.4 of the Method of Making and Curing Concrete Test specimens in the Field, ASTM C 31.~~

**~~1923.2.3.3~~** ~~Field-cured test cylinders shall be molded at the same time and from the same samples as laboratory-cured test cylinders.~~

**~~1923.2.3.4~~** ~~Procedures for protecting and curing concrete shall be improved when the strength of field-cured cylinders at test age designated for determination of f ¢c is less than 85 percent of that of companion laboratory cured cylinders. The 85 percent may be waived if field cured strength exceeds f ¢c by more than 500 psi (3448 Pa).~~

**~~1923.2.4 Investigation of low strength test results.~~**

**~~1923.2.4.1~~** ~~When there is a question as to the quality of the concrete in the structure, the building official may require core tests in accordance with the Standard Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete, ASTM C 42, as set forth in Chapter 35 of this code, or order load tests on that portion of the structure where the questionable concrete has been placed.~~

**~~1923.2.4.2~~** ~~When concrete in structures has failed to meet the minimum standard, the building official shall order analysis and reports by a registered engineer to determine the adequacy of the structure.~~

**~~1923.2.4.3~~** ~~If the likelihood of low-strength concrete is confirmed and computations indicate that load-carrying capacity may have been significantly reduced, tests of cores drilled from the area in question may be required in accordance with the Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete, ASTM C 42, as set forth in Chapter 35 of this code. In such case, three cores shall be taken for each strength test more than 500 psi (3448 kPa) below specified value of f~~ '~~c .~~

**~~1923.2.4.4~~** ~~If concrete in the structure will be dry under service conditions, cores shall be air dried at a temperature between 60°F (15°C) and 80°F (27°) and a relative humidity less than 60 percent for 7 days before testing and shall be tested dry. If concrete in the structure will be more than superficially wet under service conditions, cores shall be immersed in water for at least 40 hours and be tested wet.~~

**~~1923.2.4.5~~** ~~Concrete in an area represented by core tests shall be considered structurally adequate if the average of three cores is equals to at least 85 percent of f~~ '~~c and if no single core is less than 75 percent of f~~ '~~c. To check testing accuracy, locations represented by erratic core strengths may be retested.~~

**~~1923.2.4.6 Slump considerations.~~** ~~The maximum allowable slump of concrete shall be 6 inches (152 mm). On jobs controlled and supervised by a professional engineer, this maximum may be exceeded, but no concrete shall exceed the slump as indicated on the approved plans for proposed work.~~

***Section 1924 High-Velocity Hurricane Zones— Mixing and Placing Concrete. Modify section 1924 to read as shown:***

**SECTION 1924**

**HIGH-VELOCITY HURRICANE ZONES—**

**MIXING AND PLACING CONCRETE**

**RESERVED**

**~~1924.1 Preparation of equipment and place of deposit.~~**

**~~1924.1.1~~** ~~Preparation before concrete placement shall include the following:~~

~~1. All equipment for mixing and transporting concrete shall be clean.~~

~~2. All debris shall be removed from the spaces to be occupied by the concrete.~~

~~3. Forms shall be properly coated.~~

~~4. Masonry filler units that will be in contact with concrete shall be well drenched.~~

~~5. Reinforcement shall be thoroughly cleaned of deleterious coatings.~~

~~6. Water shall be removed from place of deposit before concrete is placed unless a tremie is to be used or unless otherwise permitted by the professional engineer.~~

~~7. All laitance and other unsound material shall be removed before additional concrete is placed against hardened concrete.~~

**~~1924.2 Mixing.~~**

**~~1924.2.1~~** ~~All concrete shall be mixed until there is uniform distribution of materials and shall be discharged completely before the mixer is recharged.~~

**~~1924.2.2~~** ~~Ready-mixed concrete shall be mixed and delivered in accordance with requirements of the Specifications for Ready-Mixed Concrete, ASTM C 94, or the Specifications for Concrete Made by Volumetric Batching and Continuous Mixing, ASTM C 685, as set forth in Chapter 35 of this code.~~

**~~1924.2.3~~** ~~Job-mixed concrete shall be mixed in accordance with the following:~~

~~1. Mixing shall be done in a batch mixer of approved type.~~

~~2. Mixer shall be rotated at a speed recommended by the manufacturer.~~

~~3. Mixing shall be continued for at least 1 ½ minutes after all materials are in the drum, unless a shorter time is shown to be satisfactory by the mixing uniformity test of Specification for Ready-Mixed Concrete, ASTM C 94.~~

~~4. Materials handling, batching, and mixing shall conform to applicable provisions of the Specifications for Ready-Mixed Concrete, ASTM C 94.~~

~~5. A detailed record shall be kept to identify:~~

~~5.1. Number of batches produced.~~

~~5.2. Proportions of materials used.~~

~~5.3. Approximate location of final deposit in structure.~~

~~5.4. Time and date of mixing and placing.~~

**~~1924.3 Conveying.~~**

**~~1924.3.1~~** ~~Concrete shall be conveyed from mixer to the place of final deposit by methods that will prevent separation or loss of the materials.~~

**~~1924.3.2~~** ~~Conveying equipment shall be capable of providing a supply of concrete at the site of placement without separation of ingredients and without interruptions sufficient to permit loss of plasticity between successive increments.~~

**~~1924.4 Depositing.~~**

**~~1924.4.1~~** ~~Concrete shall be deposited as nearly as practicable in its final position to avoid segregation caused by rehandling or flowing.~~

**~~1924.4.2~~** ~~Concreting shall be carried on at such a rate that concrete is at all times plastic and flows readily into the spaces between reinforcement.~~

**~~1924.4.3~~** ~~Concrete that has partially hardened or been contaminated by foreign materials shall not be deposited in the structure.~~

**~~1924.4.4~~** ~~Retempered concrete or concrete that has been remixed after initial set shall not be used unless approved by the building official.~~

**~~1924.4.5~~** ~~After concreting is started, it shall be carried on as a continuous operation until placing of the panel or section, as defined by its boundaries or predetermined joints is completed except as permitted or prohibited by Section 1925.4.~~

**~~1924.4.6~~** ~~Top surfaces of vertically formed lifts shall be generally level.~~

**~~1924.4.7~~** ~~When construction joints are required, joints shall be made in accordance with Section 1925.4.~~

**~~1924.4.8~~** ~~All concrete shall be thoroughly consolidated by suitable means during placement and shall be thoroughly worked around the reinforcement and embedded fixtures and into corners of forms.~~

**~~1924.5 Curing.~~**

**~~1924.5.1~~** ~~Concrete, other than high-early-strength, shall be maintained in a moist condition for at least the first seven days after placement, except when cured in accordance with Section 1924.5.3.~~

**~~924.5.2~~** ~~High-early-strength concrete shall be maintained in a moist condition for at least the first three days, except when cured in accordance with Section 1924.5.3.~~

**~~1924.5.3 Accelerated curing.~~**

~~1. Curing by high-pressure steam, steam at atmospheric pressure, heat and moisture, or other accepted processes, may be employed to accelerate strength gain and reduce time of curing. 2. Accelerated curing shall provide a compressive strength of the concrete at the load stage considered at least equal to required design strength at that load stage.~~

~~3. The curing process shall produce concrete with a durability at least equivalent to the curing method of Section 1924.5.3, Items 1 or 2.~~

~~4. Supplementary strength tests in accordance with Section 1923.2.3 may be required to ensure that curing is satisfactory.~~

**~~1924.6 Bonding.~~**

**~~1924.6.1~~** ~~Before fresh concrete is deposited or placed on or against concrete which has hardened for 8 hours or longer, the forms shall be retightened, the surface of the hardened concrete shall be cleaned of all foreign matter and laitance, and dampened, but not saturated. Fresh concrete shall not be deposited or placed on or against hardened concrete so dampened before the surface is completely free of shiny spots indicating free moisture. When the concrete against which fresh concrete will be placed is less than 8 hours old, all laitance, loose particles and dirt shall be removed.~~

**~~1924.6.2~~** ~~Where bonding of fresh to hardened concrete is necessary, construction joints and joints between footings and walls or columns, between walls or columns and beams or floors they support, and joints in unexposed walls shall be accomplished by reinforcement, dowels, adhesives, mechanical connectors or other approved methods. Hardened concrete at joints shall be dampened, but not saturated, immediately prior to the placement of fresh concrete.~~

***Section 1925 High-Velocity Hurricane Zones—Formwork, Embedded Pipes and Construction Joints. Modify section 1925 to read as shown:***

**SECTION 1925**

**HIGH-VELOCITY HURRICANE ZONES—**

**FORMWORK, EMBEDDED PIPES AND CONSTRUCTION JOINTS**

**RESERVED**

**~~1925.1 Design of formwork.~~**

**~~1925.1.1~~** ~~Forms shall be designed in accordance with ACI 347, Recommended Practice for Concrete Formwork.~~

**~~1925.1.2~~** ~~Forms shall result in a final structure that conforms to shapes, lines and dimensions of the members as required by the design drawings and specifications.~~

**~~1925.1.3~~** ~~Forms shall be substantial and sufficiently tight to prevent leakage of mortar.~~

**~~1925.1.4~~** ~~Forms shall be properly braced or tied together to maintain position and shape.~~

**~~1925.1.5~~** ~~Forms and their supports shall be designed so as not to damage previously placed structures.~~

**~~1925.1.6~~** ~~Design of formwork shall include consideration of the rate and method of placing concrete; construction loads, including vertical, horizontal and impact loads; and special form requirements for construction of shells, folded plates, domes, architectural concrete or similar types of elements.~~

**~~1925.1.7~~** ~~Forms for prestressed concrete members shall be designed and constructed to permit movement of the member without damage during application of prestressing force.~~

**~~1925.2 Removal of forms and shores.~~**

**~~1925.2.1~~** ~~No construction loads shall be supported on, nor any shoring removed from, any part of the structure under construction except when that portion of the structure in combination with the remaining forming and shoring system has sufficient strength to safely support its weight and loads placed thereon.~~

**~~1925.2.2~~** ~~Sufficient strength shall be demonstrated by structural analysis considering proposed loads, strength of the forming and shoring system and concrete strength data. Concrete strength data may be based on tests of field-cured cylinders or, when approved by the building official, on other procedures to evaluate concrete strength. Structural analysis and concrete strength test data shall be furnished to the building official when so required.~~

**~~1925.2.3~~** ~~No construction loads exceeding the combination of superimposed dead load plus specified live load shall be supported on any unshored portion of the structure under construction, unless analysis indicated adequate strength to support such additional loads.~~

**~~1925.2.4~~** ~~Forms shall be removed in a manner that does not impair the safety and serviceability of the structure. All concrete to be exposed by form removal shall have sufficient strength not to be damaged thereby.~~

**~~1925.2.5~~** ~~Form supports for prestressed concrete members may be removed when sufficient prestressing has been applied to enable prestressed members to carry their dead load and anticipated construction loads.~~

**~~1925.3 Conduits and pipes embedded in concrete.~~**

**~~1925.3.1~~** ~~Conduits, pipes and sleeves of any material not harmful to concrete, and with limitations of this section, may be embedded in concrete with approval of the professional engineer provided they are not considered to structurally replace the displaced concrete.~~

**~~1925.3.2~~** ~~Conduits or pipes of aluminum shall not be embedded in structural concrete unless effectively coated or covered to prevent aluminum-concrete reaction or electrolytic action between aluminum and steel.~~

**~~1925.3.3~~** ~~Conduits, pipes and sleeves passing through a slab, wall or beam shall not impair the strength of the construction.~~

**~~1925.3.4~~** ~~Conduits and pipes, with their fittings, embedded within a column shall not displace more than 4 percent of the area of cross section on which strength is calculated or which is required for fire protection.~~

**~~1925.3.5~~** ~~Except when plans for conduits and pipes are approved by the professional engineer and other than those merely passing through, conduits and pipes embedded within a slab, wall or beam shall satisfy the following:~~

~~1. They shall not be larger in outside dimension than three-eighths of the overall thickness of slab, wall or beam in which they are embedded.~~

~~2. They shall not be spaced closer than three diameters or widths on center.~~

~~3. They shall not impair the strength of the construction.~~

**~~1925.3.6~~** ~~Conduits, pipes and sleeves may be considered as replacing structurally in compression the displaced concrete, provided:~~

~~1. They are not exposed to rusting or other deterioration.~~

~~2. They are of uncoated or galvanized iron or steel not thinner than standard Schedule 40 steel pipe, and~~

~~3. They have a nominal inside diameter not over 2 inches (51 mm) and are spaced not less than three diameters on centers.~~

**~~1925.3.7~~** ~~In addition to other requirements of Section 1925.3 pipes that will contain liquid, gas or vapor may be embedded in structural concrete under the following conditions:~~

~~1. Pipes and fittings shall be designed to resist effects of the material, pressure and temperature to which they will be subjected.~~

~~2. Temperature of liquid, gas or vapor shall not exceed 150°F (66°C).~~

~~3. Maximum pressure to which any piping or fittings shall be subjected shall not exceed 200 psi (1379 kPa) above atmospheric pressure.~~

~~4. All piping and fittings except as provided in Section 1925.3.5 shall be tested as a unit for leaks before concrete placement. Testing pressure above atmospheric pressure shall be 50 percent in excess of pressure to which piping and fittings may be subjected, but minimum testing pressure shall not be less than 150 psi (1034 kPa) above atmospheric pressure. Pressure test shall be held for 4 hours with no drop in pressure except that which may be caused by air temperature.~~

~~5. Drain pipes and other piping designed for pressures of not more than 1 psi (7 kPa) above atmospheric pressure need not be tested as required in Section 1925.3.7(4).~~

~~6. Pipes carrying liquid, gas or vapor that is explosive or injurious to health shall be tested again as specified in Section 1925.3.7(4) after concrete has hardened.~~

~~7. No liquid, gas or vapor, except water not exceeding 90°F (32°C) nor 50 psi (350 kPa) pressure, shall be placed in the pipes until the concrete has attained its design strength.~~

~~8. Unless piping in solid slabs is for radiant heating, it shall be placed between top and bottom reinforcement.~~

~~9. Concrete cover for pipes and fittings shall not be less than 11/2 inches (38 mm) for concrete exposed to earth or weather, nor 3/4 inch (19 mm) for concrete not exposed to weather or in contact with ground.~~

~~10. Reinforcement with an area not less than 0.002 times the area of concrete section shall be provided normal to the piping.~~

~~11. Piping and fittings shall be assembled by welding, brazing, solder sweating or other equally satisfactory methods. Screw connections shall not be permitted. Piping shall be so fabricated and installed that cutting, bending or displacement of reinforcement from its proper location will not be required.~~

**~~1925.4 Construction joints.~~**

**~~1925.4.1~~** ~~Surfaces of the concrete construction joints shall be cleaned and laitance removed.~~

**~~1925.4.2~~** ~~Immediately before new concrete is placed, all construction joints shall be wetted and standing water removed.~~

**~~1925.4.3~~** ~~Construction joints shall be so made and located as not to impair the strength of the structure. Provision shall be made for transfer of shear and other forces through construction joints.~~

**~~1925.4.4~~** ~~Construction joints in floors shall be located near the middle of the spans of slabs, beams or girders, unless a beam intersects a girder at the middle location, in which case, joints in the girders shall be offset a distance approximately twice the width of the beam.~~

**~~1925.4.5~~** ~~Beams, girders or slabs supported by columns or walls shall not be cast or erected until concrete in the vertical support members is no longer plastic.~~

**~~1925.4.6~~** ~~Beams, girders, haunches, drop panels and capitals shall be placed monolithically as part of a slab system, unless otherwise shown on design drawing.~~

***Section 1926 High-Velocity Hurricane Zones—Details of Reinforcement. Modify section 1926 to read as shown:***

**SECTION 1926**

**HIGH-VELOCITY HURRICANE ZONES—**

**DETAILS OF REINFORCEMENT**

**RESERVED**

**~~1926.1 Bending reinforcement.~~**

**~~1926.1.1~~** ~~All reinforcement shall be bent cold, unless otherwise permitted by the professional engineer.~~

**~~1926.1.2~~** ~~Reinforcement partially embedded in concrete shall not be field bent, except as shown on the design drawings or permitted by the professional engineer.~~

**~~1926.2 Surface conditions of reinforcement.~~**

**~~1926.2.1~~** ~~At the time concrete is placed, reinforcement shall be free from mud, oil or other nonmetallic coatings that adversely affect bonding capacity.~~

**~~1926.2.2~~** ~~Steel reinforcement, except prestressing tendons, with rust, mill scale or a combination of both shall be considered satisfactory, provided the minimum dimensions, including the height of deformations and weight of a hand-wire-brushed test specimen, are not less than applicable ASTM specification requirements.~~

**~~1926.2.3~~** ~~Prestressing tendons shall be clean and free of oil, dirt, scale, pitting and excessive ruts. A light oxide is permissible.~~

**~~1926.3 Placing reinforcement.~~**

**~~1926.3.1~~** ~~Steel reinforcement shall be accurately placed and adequately secured in position by concrete or metal chairs, spacers or other acceptable methods. The minimum clear distance between parallel bars, except in columns, shall be equal to the nominal diameter of the bars. In no case shall the clear distance between bars be less than 1 inch (25 mm), or less than one and one-third times the maximum size of the coarse aggregate. When reinforcement in beams or girders is placed in two or more layers, the clear distance between layers shall not be less than 1 inch (25 mm) nor less than the diameter of the bars, and the bars in the upper layers shall be placed directly above those in the bottom layer.~~

**~~1926.3.2~~** ~~Unless otherwise permitted by the building official and professional engineer, reinforcement, prestressing tendons and prestressing ducts shall be placed within the following tolerances:~~

~~1. Tolerance for depth, d, and minimum concrete cover in flexural members, walls and compression members shall be as follows, where d represents the distance from the extreme compression fiber to the centroid of the tension reinforcement:~~

|  |  |  |
| --- | --- | --- |
|  | **~~Tolerance on d~~** | **~~Tolerance on minimum concrete cover~~** |
| ~~d < 8 in. d > 8 in.~~ | ~~+/- 3/8 in. +/- 1/2 in.~~ | ~~- 3/8 in. - 1/2 in.~~ |

**~~Exceptions:~~**

~~a. Tolerance for the clear distance to formed soffits shall be minus 1/4 inch (6.3 mm).~~

~~b. Tolerance for cover shall not exceed minus one-third the minimum concrete cover required in the contract drawings nor less than 1 inch (25 mm) when exposed to weather.~~

~~2. Tolerance for longitudinal location of bends and ends of reinforcement shall be + 2 inches (+ 51 mm) except at discontinuous ends of members where tolerance shall be + 1/2 inch (+ 12.7 mm).~~

**~~1926.3.3~~** ~~Welded wire fabric with a wire size not greater than W5 or D5 used in slabs not exceeding 10 feet (3 m) in span may be curved from a point near the top of the slab over the support to a point near the bottom of the slab at midspan, provided such reinforcement is either continuous over, or securely anchored at, the support.~~

**~~1926.3.4~~** ~~Welding of crossing bars shall not be permitted for assembly of reinforcement unless approved by the professional engineer of record.~~

**~~1926.3.5~~** ~~Spacing limits and concrete cover for reinforcement shall be shown on the design drawings.~~

**~~1926.4 Splices in reinforcement.~~**

**~~1926.4.1~~** ~~In slabs, beams and girders, splices in reinforcement at points of maximum stress shall be avoided wherever possible. Such splices, where used, shall be welded, lapped or otherwise fully developed, but, in any case, shall transfer the entire stress from bar to bar without exceeding the allowable bond and shear stresses. The minimum overlap for a lapped splice shall be 24 bar diameters, but not less than 12 inches (25 mm) for bars and in accordance with Section 12.15 and 12.16 of ACI 318. The clear distance between bars shall also apply to the clear distance from a contact splice and adjacent splices or bars.~~

**~~1926.4.2~~** ~~Reinforcement shall be spliced only as required or permitted on design drawings, or in specifications or as authorized by the professional engineer of record.~~

**~~1926.4.3~~** ~~Lap splices shall not be used for bars larger than #11 except as provided in ACI 318.~~

**~~1926.4.4~~** ~~Lap splices of bundled bars shall be based on the lap splice length required for individual bars within a bundle, increased 20 percent for a 3-bar bundle and 33 percent for a 4-bar bundle. Individual bar splices within a bundle shall not overlap.~~

**~~1926.4.5~~** ~~Bars spliced by noncontact lap splices in flexural members shall not be spaced transversely farther apart than one-fifth the required lap splice length, nor 6 inches (152 mm).~~

**~~1926.4.6~~** ~~Welded splices may be used, provided the metallurgical properties of the bars are suitable as determined by the professional engineer of record in accordance with AWS D1.4.~~

**~~1926.4.7 End bearing splices.~~**

**~~1926.4.7.1~~** ~~In bars required for compression only, compressive stress may be transmitted by bearing of square cut ends held in concentric contact by a suitable device.~~

**~~1926.4.7.2~~** ~~Bar ends shall terminate in flat surfaces within 11/2 degrees of a right angle to the axis of the bars and shall be fitted within 3 degrees of full bearing after assembly.~~

**~~1926.4.7.3~~** ~~End bearing splices shall be used only in members containing closed ties, closed stirrups or spirals.~~

**~~1926.4.8~~** ~~Welded splices in reinforcing bars shall be made by certified welders and shall comply with the Standard Structural Welding Code-Reinforcing Steel, AWS D1.4, as set forth in Chapter 35 of this code.~~

**~~1926.5 Concrete protection for reinforcement (nonprestressed).~~**

**~~1926.5.1~~** ~~The reinforcement of footings and other principal structural members in which the concrete is deposited against the ground shall have not less than 3 inches (76 mm) of concrete between it and the ground contact surface. If the concrete surfaces after removal of the forms are to be exposed to the weather or be in contact with the ground, the reinforcement shall be protected with not less than 2 inches (51 mm) of concrete for bars larger than No. 5 and 11/2 inches (38 mm) for No. 5 bars or smaller except as set forth in Section 1926.5.5.~~

**~~1926.5.2~~** ~~The concrete protective covering for reinforcement at surfaces not exposed directly to the ground or weather shall be not less than 3/4 inch (19 mm) for slabs and wall; and not less than 11/2 inches (38 mm) for beams, girders and columns. In concrete ribbed floors in which the clear distance between ribs is not more than 30 inches (762 mm), the protection of reinforcement shall be at least 3/4 inch (19 mm).~~

**~~1926.5.3~~** ~~Concrete protection for reinforcement shall in all cases be as least equal to the diameter of bars except for concrete slabs and joists as set forth herein.~~

**~~1926.5.4~~** ~~Exposed reinforcement bars intended for bonding with future extensions shall be protected from corrosion by concrete or other adequate covering.~~

**~~1926.5.5~~** ~~For exterior balcony slabs, slab surface shall be sloped 1/8 unit in 12 units or greater to safeguard against ponding of water and slabs shall be designed and constructed in accordance with the provisions of ACI 318.~~

**~~1926.5.6~~** ~~Concrete cover for cast-in-place, precast and prestressed concrete shall be in accordance with ACI 318 if not otherwise specified in this section. When this code requires a thickness of cover for fire protection greater than the minimum concrete specified in ACI 318, the greater thickness shall be used.~~

**~~1926.5.7~~** ~~Exposed reinforcement, inserts and plates intended for bonding with future extensions shall be protected from corrosion.~~

***Section 1927 High-Velocity Hurricane Zones—Precast Concrete Units. Modify Section 1927 in favor of the base document to read as shown:***

**SECTION 1927**

**HIGH-VELOCITY HURRICANE ZONES—**

**PRECAST CONCRETE UNITS**

**RESERVED**

**~~1927.1 General.~~**

**~~1927.1.1~~** ~~Precast concrete units shall comply with the minimum requirements set forth in this section, and the standard set forth in Section 1920.3.~~

**~~1927.1.2~~** ~~All precast concrete elements and their attachments (including embedments) to the main structural frame shall be designed by, and bear the seal of a Florida-registered architect or a Florida-registered engineer, which architect or engineer shall be proficient in structural design. The design shall be based on rational analysis for loads set forth in Chapter 16 (High-Velocity Hurricane Zones). The architect/engineer of record may delegate this responsibility to a Florida-registered delegated engineer. In that case, shop drawings and design calculations prepared by such delegated engineer shall be reviewed and approved by the architect and the engineer of record.~~

**~~1927.1.3~~** ~~Only the material cast monolithically with the units at the time of manufacture shall be used in computing stresses unless adequate and approved shear transfer is provided.~~

**~~1927.1.4~~** ~~The building official may promulgate and set forth in writing such reasonable rules for requiring tests to be made by an approved laboratory as he may consider necessary to insure compliance with this code or uniformity of the products produced. The quantity of tests shall be based on consideration of safety or volume of output.~~

**~~1927.1.5~~** ~~The building official or his or her representative shall have free access to the plant of any producer at all hours of normal operation, and failure to permit such access shall be cause for revocation of approval.~~

**~~1927.1.6~~** ~~Failure of any product to satisfy in every respect the quality prescribed, or failure to conform with plans and specifications, shall be cause for rejection of the products.~~

**~~1927.2~~** ~~Statements of responsibilities of architects and professional engineers on design of structures using precast concrete components.~~

**~~1927.2.1~~** ~~The structural construction documents shall indicate the configuration of precast components and shall include details of supports, anchors and connections for those components. Permit documents shall include sufficient details describing the attachment of precast units (including embedments) to the main structure.~~

**~~1927.2.2~~** ~~The precast permit documents shall bear the signature and seal of the professional architect or engineer charged with the responsibility of the design of the precast units. The architect or engineer of record may delegate this responsibility to a Florida-registered delegated engineer. In that case, shop drawings and design calculations prepared by such delegated engineer shall be reviewed and approved by the architect and/or the engineer of record as an indication that his or her intent has been understood and that the specified criteria have been used.~~

**~~1927.2.3~~** ~~The structural submittals shall include component details, calculations and fabrication and erection drawings. All such submittals shall identify the specific project.~~

**~~1927.3 Aggregate.~~** ~~The maximum size of the aggregate for precast units shall be not larger than one-third of the narrowest dimension between sides of the forms of the member in which the unit is cast nor larger than three-fourths of the minimum clear spacing between reinforcing bars and sides of the forms, except that where concrete is placed by means of high frequency vibration, the maximum size of the aggregate shall not be larger than one-half of the narrowest dimension between sides of the form.~~

**~~1927.4 Strength of concrete.~~**

**~~1927.4.1~~** ~~Concrete for precast structural units made of crushed stone or other heavy aggregate shall have a compressive strength of not less than 2,500 psi (17 238 kPa) at 28 days.~~

**~~1927.4.2~~** ~~Concrete for precast units made of light weight aggregate concrete shall follow the general provisions of Section 1923.1.2 with consideration of the nature and limitations of the aggregate and the strength of the product.~~

**~~1927.5 Workmanship.~~**

**~~1927.5.1~~** ~~The mix, the gradation of the aggregate and the workability shall be such as to insure complete filling of the form and continuous intimate bond between the concrete and all steel.~~

**~~1927.5.2~~** ~~Handling and conveying before curing shall be reduced to a minimum. Machinery for this purpose should be so designed that the unit will not be subject to bending or shock which would produce incipient cracks or broken edges or corners. Precast units shall not be freely transported or placed until the concrete is at least 14 days old, if made with regular cement, or at least seven days old, if made with Type III cement, or until its strength, as established by definite tests, is at least 60 percent of the required 28-day strength.~~

**~~1927.5.3~~** ~~The use of precast structural units not complying with ACI requirements or having visible cracks, honeycomb, exposed reinforcing except at ends or, with a compressive section dimension more than 1/8 inch (3.1 mm) less than specified dimension shall not be permitted.~~

**~~1927.6 Curing.~~**

**~~1927.6.1~~** ~~No precast structural unit shall be removed from the form until the concrete has attained a compressive strength of 50 percent of the 28-day design strength but not less than 1,250 psi (8619 kPa) as verified by representative tests.~~

**~~1927.6.2~~** ~~Curing by high pressure steam, steam vapor or other accepted processes may be employed to accelerate the hardening of the concrete and to reduce the time of curing.~~

**~~1927.6.3~~** ~~To ensure the eventual placement of the units in the structure without damage, the handling shall be done in such a manner that bending shall be reduced to a minimum or prevented.~~

**~~1927.7 Identification and marking.~~** ~~All joists, beams, girders and other units shall show some mark plainly indicating the top of the unit. This mark or symbol shall indicate the manufacturer, the date of manufacture and the length, size and type of reinforcing.~~

**~~1927.8 Cutting of holes~~**~~. No openings or channels not provided for in the structural design shall be made on the job without the specific approval of the professional engineer in accordance with his or her written, detailed instructions covering such work.~~

**~~1927.9 Anchorage.~~** ~~Anchorage of all precast concrete units shall be designed, based on rational analysis, to transmit loads and other forces to the structural frame.~~

**~~1927.10 Bridging.~~** ~~Joists shall be secured against lateral displacement by cast-in-place bridging, and such bridging shall be spaced not to exceed 32 times the width of the compression flange of the joist except that for roof systems, cast-in-place portland-concrete slabs embedding the top flanges not less than 1/2 inch (12.7 mm), or steel inserts cast in the joist heads to which bulb-tees supporting gypsum decks are welded, shall be accepted in lieu of bridging.~~

**~~1927.11 Connections.~~** ~~All joints and connections will perform their function at all stages of loading without overstress and with proper safety factors against failure caused by overload. Loading conditions to be considered in the design of joints and connections are service loads, including wind forces, volume changes resulting from shrinkage, creep, and temperature change, reaction loads, and loading encountered in stripping forms, shoring and removal of shores, storage and transportation of members.~~

**~~1927.12 Inspections.~~**

**~~1927.12.1~~** ~~All structural precast units shall be inspected for quality control by an architect or professional engineer qualified to perform these inspections prior to the concrete placement at the casting yard.~~

**~~1927.12.2~~** ~~All structural precast units and their attachments to the main structure shall be inspected after erection, but before concealment. Such inspections shall be performed by a Florida registered architect or professional engineer.~~

***Section 1928 High-Velocity Hurricane Zones—Prestressed Concrete. Modify Section 1928 in favor of the base document to read as shown:***

**SECTION 1928**

**HIGH-VELOCITY HURRICANE ZONES —**

**PRESTRESSED CONCRETE**

**RESERVED**

**~~1928.1~~** ~~Prestressed concrete, as defined in Section 1921, shall comply with this section.~~

**~~1928.1.1~~** ~~All prestressed structural items shall be designed by a registered professional engineer. Openings or channels not provided for in the structural design shall not be made on the job without the specific approval of the design professional engineer.~~

**~~1928.1.2~~** ~~The building official may promulgate and set forth in writing such reasonable rules for requiring tests to be made by an approved laboratory as he or she may consider necessary to insure compliance with this code or uniformity of the products produced.~~

**~~1928.1.3~~** ~~The building official or his or her representative shall have free access to the plant of any producer at all hours of normal operation. Failure to permit such access shall be cause for revocation of approval.~~

**~~1928.1.4~~** ~~Failure of any product to satisfy the quality prescribed or failure to conform to plans and specifications shall be cause for rejection of the product.~~

**~~1928.2~~** ~~Statements of responsibilities of architects and professional engineers on design of cast-in-place post-tensioned concrete structural systems.~~

**~~1928.2.1~~** ~~The structural construction documents shall show the magnitude and location of all prestressing forces and all design assumptions.~~

**~~1928.2.2~~** ~~The structural engineer of record and/or the architect of record shall require the submission of calculations and installation drawings from a specialty engineer for post-tensioning systems for review by the structural engineer of record and/or the architect of record. Review is an indication that his or her intent has been understood and that the specified criteria have been used. The installation drawings shall provide full details of materials to be used including necessary accessories and instructions for construction and shall identify the specific project and shall bear the impressed seal, signature and date of the specialty engineer who prepared them.~~

**~~1928.2.3~~** ~~It is the responsibility of the structural engineer of record and/or the architect of record to review the post-tensioning system installation drawings so that the drawings are coordinated with the reinforcing steel shop drawings.~~

**~~1928.2.4~~** ~~Determining the effect of post-tensioning on other parts of the building is the responsibility of the structural engineer of record and/or the architect of record.~~

**~~1928.3 Design and construction.~~**

**~~1928.3.1~~** ~~Design and construction shall be in accordance with Chapter 18 of ACI 318.~~

**~~1928.3.2~~** ~~Calcium chloride shall not be used in concrete for prestressed members.~~

**~~1928.4 Tendon and anchorage zones.~~**

**~~1928.4.1~~** ~~Reinforcement shall be provided where required in tendon anchorage zones to resist bursting, splitting, and spalling forces induced by tendon anchorage. Regions of abrupt change in section shall be adequately reinforced.~~

**~~1928.4.2~~** ~~End blocks shall be provided where required for support bearing or for distribution of concentrated prestressing forces.~~

**~~1928.4.3~~** ~~Post-tensioning anchorage and supporting concrete shall be designed to resist maximum jacking force for strength of concrete at time of prestressing.~~

**~~1928.4.4~~** ~~Post-tensioning anchorage zones shall be designed to develop the guaranteed ultimate tensile strength of prestressing tendons using a strength reduction factor of 0.90 for concrete.~~

**~~1928.5 Corrosion protection for unbonded prestressing tendons.~~**

**~~1928.5.1~~** ~~Unbonded tendons shall be completely coated with suitable material to ensure corrosion protection.~~

**~~1928.5.2~~** ~~Tendon wrapping shall be continuous over the entire length to be unbonded, and shall prevent intrusion of cement paste or loss of coating materials during concrete placement.~~

**~~1928.6 Post-tensioning ducts.~~**

**~~1928.6.1~~** ~~Ducts for grouted or unbonded tendons shall be mortar-tight and nonreactive with concrete, tendons or filler material.~~

**~~1928.6.2~~** ~~Ducts for grouted single wire, strand or bar tendons shall have an inside diameter at least 1/4 inch (6.3 mm) larger than tendon diameter.~~

**~~1928.6.3~~** ~~Ducts for grouted multiple wire, strand or bar tendons shall have an inside cross-sectional area at least two times the net area of the tendons.~~

**~~1928.7 Grout for prestressing tendons.~~**

**~~1928.7.1~~** ~~Grout shall consist of portland cement and water; or Portland cement, sand and water.~~

**~~1928.7.2~~** ~~Materials for grout shall conform as specified in ACI 318 and be as follows:~~

~~1. Portland cement.~~

~~2. Water content shall be minimum necessary for proper pumping of grout; however, water-cement ratio shall not exceed 0.45 by weight.~~

~~3. Sand, if used, shall conform to Standard Specifications for Aggregate for Masonry Mortar, ASTM C 144, except that gradation may be modified as necessary to obtain satisfactory workability.~~

~~4. Admixtures conforming to ACI 318 and known to have no injurious effects on grout, steel or concrete may be used. Calcium chloride shall not be used.~~

~~5. Water shall not be added to increase grout flowability that has been decreased by delayed use of grout.~~

~~6. Grout temperatures shall not be above 90°F (32°C) during mixing and pumping.~~

**~~1928.8 Protection for prestressing tendons.~~** ~~Burning or welding operations in the vicinity of prestressing tendons shall be carefully performed, so that tendons are not subject to excessive temperatures, welding sparks or ground currents.~~

**~~1928.9 Application and measurement of prestressing force.~~**

**~~1928.9.1~~** ~~Prestressing force shall be determined by both of the following methods and the cause of any difference in force determination that exceeds 5 percent shall be ascertained and corrected.~~

~~1. Measurement of tendon elongation. Required elongation shall be determined from average load-elongation curves for prestressing tendons used.~~

~~2. Observation of jacking force on a calibrated gauge or load cell or by use of a calibrated dynamometer.~~

**~~1928.9.2~~** ~~Where transfer of force from bulkheads or pretensioning bed to concrete is accomplished by flame cutting prestressing tendons, cutting points and cutting sequence shall be predetermined to avoid undesired temporary stresses.~~

**~~1928.9.3~~** ~~Long lengths of exposed pretensioned strand shall be cut near the member to minimize shock to concrete.~~

**~~1928.9.4~~** ~~Total loss of prestress as a result of unreplaced broken tendons shall not exceed 2 percent of total prestress.~~

**~~1928.10 Post-tensioning anchorages and couplers.~~**

**~~1928.10.1~~** ~~Couplers shall be placed in areas approved by the professional engineer and enclosed in housing long enough to permit necessary movements.~~

**~~1928.10.2~~** ~~In unbonded construction subject to repetitive loads, special attention shall be given to the possibility of fatigue in anchorages and couplers.~~

**~~1928.10.3~~** ~~Anchorage and end fittings shall be permanently protected against corrosion.~~

***Section 1929 High-Velocity Hurricane Zones - Pneumatically Placed Concrete (Shotcrete)***

***Modify Section 1929 to read as shown:***

**SECTION 1929**

**HIGH-VELOCITY HURRICANE ZONES—**

**PNEUMATICALLY PLACED CONCRETE (SHOTCRETE)**

**RESERVED**

**~~1929.1 General.~~**

**~~1929.1.1~~** ~~Pneumatically placed concrete is a proportioned combination of fine aggregate portland cement and water which, after mixing, is pneumatically projected by air directly onto the surface to which it is to be applied.~~

**~~1929.1.2~~** ~~Pneumatically placed concrete shall conform to all requirements of Specifications for Materials, Proportioning and Application of Shotcrete, ACI 506.2 published by the American Concrete Institute, except as modified herein.~~

**~~1929.1.3~~** ~~Pneumatically placed concrete shall be composed of Portland cement, aggregate and water proportioned to produce a concrete suitable for pneumatic application.~~

**~~1929.1.4~~** ~~Concrete ingredients shall be selected and proportioned in a manner that will produce concrete which will be extremely strong, dense and resistant to weathering and abrasion.~~

**~~1929.2 Sampling and testing cement and aggregate.~~** ~~The contractor shall determine the source, kind and quality of the cement and aggregates to be used in the work well in advance of the time scheduled for starting the work and when so directed by the building official shall submit such information for approval before starting shotcrete operation.~~

**~~1929.3 Surface preparation.~~** ~~To insure adequate bond, the newly chipped and sandblasted surface shall be thoroughly moistened with water prior to application of shotcrete. In no instance shall shotcrete be applied in an area where free running water exists.~~

**~~1929.4 Proportioning.~~** ~~Prior to the start of shotcreting, the contractor shall submit to the professional engineer the recommended mix as a ratio of cement to aggregate. The recommended mix shall be on the basis of test data from prior experience.~~

**~~1929.5 Mixing.~~**

**~~1929.5.1~~** ~~Shotcrete shall be thoroughly mixed by machine and then passed through a sieve to remove all large particles before placing in the hopper of the cement gun. The mixture shall not be permitted to become damp. Each batch should be entirely discharged before recharging is begun. The mixer should be cleaned thoroughly enough to remove all adherent materials from the mixing vanes and from the drum at regular intervals.~~

**~~1929.5.2~~** ~~Water in any amount shall not be added to the mix before it enters the cement gun. Quantities of water shall be controlled by a valve at the nozzle of the gun. Water content shall be adjusted as required for proper placement, but shall in no case exceed 4 gallons (15 L) of water per sack of cement, including the water contained in the aggregate.~~

**~~1929.5.3~~** ~~Remixing or tempering shall not be permitted. Mixed material that has stood 45 minutes without being used shall be discarded. Rebound materials shall not be reused.~~

**~~1929.6 Application.~~**

**~~1929.6.1~~** ~~In shooting walls and columns, application shall begin at the bottom and the first coat shall completely embed the reinforcement to the form.~~

**~~1929.6.2~~** ~~In shooting beams, application shall begin at the bottom and a surface at right angles to the nozzle shall be maintained.~~

**~~1929.6.3~~** ~~In shooting slabs, the nozzle shall be held at a slight angle to the work so that rebound is blown on to the finished portion where it shall be removed.~~

**~~1929.6.4~~** ~~Corners shall be filled first. "Shooting" shall be from an angle as near perpendicular to the surface as practicable, with the nozzle held approximately 3 feet (915 mm) from the work, except in confined control. If the flow of material at the nozzle is not uniform and slugs, sand spots or wet sloughs result, the nozzle person shall direct the nozzle away from the work until the faulty conditions are corrected. Such defects shall be replaced as the work progresses.~~

**~~1929.6.5~~** ~~Shotcreting shall be suspended if:~~

~~1. Air velocity separates the cement from the sand at the nozzle.~~

~~2. Temperature approaches freezing and the newly placed shotcrete cannot be protected.~~

**~~1929.6.6~~** ~~The time interval between successive layers in sloping, vertical or overhanging work must be sufficient to allow initial but not final set to develop. At the time the initial set is developing, the surface shall be cleaned to remove the thin film of laitance in order to provide a good bond with succeeding applications.~~

**~~1929.7~~** ~~Construction joints. Construction joints or day's work joints shall be sloped off to a thin, clean, regular edge, preferably at a 45 degree (0.78 rad) slope. Before placing the adjoining work, the slope portion and adjacent shotcrete shall be thoroughly cleaned as necessary, then moistened and scoured with an air jet.~~

**~~1929.8 Curing and protection.~~**

**~~1929.8.1~~** ~~Curing shall be in accordance with ACI 506.2 depending upon atmospheric condition.~~

**~~1929.8.2~~** ~~Immediately after placement, shotcrete shall be maintained in a moist condition for at least the first 24 hours.~~

**~~1929.8.3~~** ~~Final curing shall continue for seven days after placement if Type I Portland cement is used, or for three days if high-early-strength Type III Portland cement is used, or until the specified strength is attained. Final curing may consist of the initial curing process or an approved moisture-retaining covering.~~

**~~1929.8.4~~** ~~Natural curing may be used when relative humidity remains above 85 percent when approved by the professional engineer of record.~~

**Chapter 20 – Aluminum**

***Section 2001 – General. Change Section 2001.1 to read as shown:***

**2001.1 Scope.** This chapter shall govern the quality, design, fabrication and erection of aluminum. The quality, design, fabrication and erection of aluminum used structurally in buildings or structures shall conform to good engineering practice, the provisions of this chapter and other applicable requirements of this code.

**Exception:** Buildings and structures located within the high-velocity hurricane zone shall comply with the provisions of Sections 2003 and 2002.7.

***Section 2002 – Materials. Change Section 2002 to read as shown:***

**2002.1 General.** Aluminum used for structural purposes in buildings and structures shall comply with AA ASM 35 and AA ADM 1. The *nominal loads* shall be the minimum design loads required by Chapter 16. The use of aluminum alloys not listed in the manual shall be permitted provided their standard of performance is not less than those required in the manual and the performance is substantiated to the satisfaction of the building official.

**2002.2.1 Definitions**

**PRIMARY MEMBER.** Structural framing members providing structural support to other members and/or surfaces of a structure including, but not limited to beams, posts, columns, joists, structural gutters, headers, eave rail, purlins, roof brace.

**SECONDARY MEMBERS.** Structural framing members which do not provide basic support for the entire structure, generally including, but not limited to, such members as kickplate rails, chair rails, roof or wall panels, wall brace.

**STRUCTURAL MEMBERS.** Members or sections that provide support to an assembly and/or resist applied loads.

**2002.3 Screen enclosures.**

**2002.3.1** Actual wall thickness of extruded aluminum members shall be not less than 0.040 inch (1 mm).

**2002.3.2** Reserved.

**2002.3.3** Vinyl and acrylic panels shall be removable. Removable panels shall be identified as removable by a decal. The identification decal shall essentially state “Removable panel SHALL be removed when wind speeds exceed 75 mph (34 m/s).” Decals shall be placed such that the decal is visible when the panel is installed.

**2002.4 Loads.** Structural members supporting screened enclosures shall be designed for wind in both of two orthogonal directions using the pressures given in Table 2002.4. Each primary member shall also be designed for a 300 pound (1.33 kN) load applied vertically downward along any 1 foot (305 mm) of any member, not occurring simultaneously with wind load.

**Exception:** In addition to wind pressures, purlins shall also be designed for a 200 pound (0.89 kN) load applied vertically downward along any 1 foot (305 mm) of any member, not occurring simultaneously with wind load.

**2002.4.1 Design Guide.** The following design guides shall be accepted as conforming to accepted engineering practices:

AAF Guide to Aluminum Construction in High Wind Areas.

**2002.5 Wall panels.** The minimum thickness for formed sheet aluminum structural wall panels shall be not less than 0.024 inch (0.6 mm), subject to approved tolerances.

***Section 2002 – Materials. Add Table 2002.4 to read as shown:***

**TABLE 2002.4**

**DESIGN WIND PRESSURES SCREENED ENCLOSURES a,b,f,g,h**

**(STRENGTH DESIGN OR LRFD ONLY)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **ULTIMATE DESIGN WIND SPEED VULT (MPH)** | | | | | | | | | | | | | | | | | | | | | |
|  | 110 | | | 120 | | | **130** | | | 140 | | | 150 | | | 160 | | | 170 | | | |
| **Surface** | **Design Pressures by Exposure Category (psf)** | | | | | | | | | | | | | | | | | | | | | |
| **B** | **C** | **D** | **B** | **C** | **D** | **B** | **C** | **D** | **B** | **C** | **D** | **B** | **C** | **D** | **B** | **C** | **D** | | **B** | **C** | **D** |
| Horizontal Pressures on Windward Surfacesd | 17 | 24 | 28 | 20 | 28 | 33 | 23 | 32 | 38 | 27 | 38 | 44 | 31 | 43 | 51 | 36 | 49 | 58 | | 40 | 56 | 66 |
| Horizontal Pressures on Leeward Surfacesd | 13 | 18 | 21 | 15 | 22 | 26 | 20 | 26 | 31 | 21 | 29 | 34 | 22 | 34 | 40 | 25 | 39 | 46 | | 29 | 44 | 52 |
| Vertical Pressures on Screen Surfacesc | 4 | 7 | 8 | 6 | 8 | 9 | 6 | 9 | 11 | 8 | 11 | 12 | 9 | 12 | 14 | 10 | 14 | 16 | | 11 | 15 | 18 |
| Vertical Pressures on Solid Surfacese | 14 | 19 | 23 | 17 | 23 | 27 | 20 | 27 | 32 | 23 | 32 | 37 | 25 | 36 | 42 | 29 | 41 | 48 | | 33 | 46 | 54 |

For SI: 1 pound per square foot = 9.479 kN/m2.

**NOTES:**

a. Pressures apply to enclosures with a mean enclosure roof height of 30 feet (10 m). For other heights, multiply the pressures in this table by the factors in Table 2002.4A.

b. Apply horizontal pressures to the area of the enclosure projected on a vertical plane normal to the assumed wind direction, simultaneously inward on the windward side and outward on the leeward side.

c. Apply vertical pressures upward or downward to the area of the enclosure projected on a horizontal plane.

d. Apply horizontal pressures simultaneously with vertical pressures.

e.  Table pressures are MWFRS Loads. The design of solid roof panels and their attachments shall be based on component and cladding loads for enclosed or partially enclosed structures as appropriate.

f. Table pressures apply to 20 × 20 × 0.013" mesh screen. For 18 ×14 × 0.013" mesh screen, pressures on screen surfaces may be multiplied by 0.88. For screen densities greater than 20 × 20 × 0.013", use pressures for enclosed buildings.

g. Table pressures may be interpolated using ASCE 7 methodology.

h. For allowable stress design (ASD) pressures shall be permitted to be multiplied by 0.6.

***Section 2002 – Materials. Add Table 2002.4A to read as shown:***

**TABLE 2002.4A**

**HEIGHT ADJUSTMENT FACTORS**

|  |  |  |  |
| --- | --- | --- | --- |
| **MEAN ROOF HEIGHT** | **EXPOSURE** | | |
| **B** | **C** | **D** |
| 0-15 | 1 | 0.86 | 0.89 |
| 20 | 1 | 0.92 | 0.93 |
| 25 | 1 | 0.96 | 0.97 |
| 30 | 1 | 1 | 1 |
| 35 | 1.05 | 1.03 | 1.03 |
| 40 | 1.09 | 1.06 | 1.05 |
| 45 | 1.12 | 1.09 | 1.07 |
| 50 | 1.16 | 1.11 | 1.09 |
| 55 | 1.19 | 1.14 | 1.11 |
| 60 | 1.22 | 1.16 | 1.13 |

***Section 2002 – Materials. Add Section 2002.6 to read as shown:***

**2002.6 Sunroom design.**

**2002.6.1** Sunrooms shall comply with AAMA/NPEA/NSA 2100.

**2002.6.2**For the purpose of applying the criteria of the AAMA/NPEA/NSA 2100, sunrooms shall be categorized in one of the following categories by the permit applicant, design professional or the property owner where the sunroom is being constructed.

**Category I:** A Thermally Isolated Sunroom with walls that are either open or enclosed with insect screening or 0.5 mm (20 mil) maximum thickness plastic film. The space is defined as a non-habitable, non-conditioned sunroom.

**Category II:** A Thermally Isolated Sunroom with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The space is defined as a non-habitable, non-conditioned sunroom.

**Category III:** A Thermally Isolated Sunroom with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The sunroom fenestration complies with additional requirements for air infiltration resistance and water penetration resistance. The space is defined as a non-habitable, non-conditioned sunroom.

**Category IV:** A Thermally Isolated Sunroom with enclosed walls. The sunroom is designed to be heated and or cooled by a separate temperature control or system and is thermally isolated from the primary structure. The sunroom fenestration complies with additional requirements for air infiltration resistance, water penetration resistance, and thermal performance. The space is defined as a non-habitable and conditioned sunroom.

**Category V:** A Sunroom with enclosed walls. The sunroom is designed to be heated and or cooled and is open to the main structure. The sunroom fenestration complies with additional requirements for air infiltration resistance, water penetration resistance, and thermal performance. The space is defined as a habitable and conditioned sunroom.

***Section 2002 – Materials. Add Section 2002.7 to read as shown:***

**2002.7 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 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  Section 1609.1.1,

(b) Designs that consider these screen alternates shall comply with 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 Section 1605.2 or allowable stress design methods of 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 Section 454.2.17 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 2003 High-Velocity Hurricane Zones – Aluminum. Change Section 2003 to read as shown:***

**SECTION 2003**

**HIGH-VELOCITY HURRICANE ZONES—**

**ALUMINUM**

**2003.1 Design**. Aluminum members shall be designed by methods admitting of rational analysis according to established principles of mechanics.

**2003.2 Standards.** The design, fabrication, and erection of structural aluminum shall conform to the Aluminum Design Manual.

**2003.3 Workmanship.** Aluminum construction shall be in conformance with the tolerances, quality and methods of construction as set forth in Section 2003.2 and the American Welding Society's Structural Welding Code-Aluminum (D1.2).

**2003.4 Definitions.** Reserved. ~~Members shall be defined as in Section 2002.2.1.~~

**2003.5 Identification.** Reserved. ~~Aluminum for structural elements shall at all times be segregated or otherwise handled in the fabricator's plant so that the separate alloys and tempers are positively identified and, after completion of fabrication, shall be marked to identify the alloy and temper. Such markings shall be affixed to complete members and assemblies or to boxed or bundled shipments of multiple units prior to shipment from the fabricator's plant.~~

**~~Exception:~~** ~~Certification by the fabricator and or contractor shall be provided attesting to the alloy and temper of the material.~~

**2003.6 Allowable unit stresses.**

**2003.6.1** The design, fabrication and assembly of aluminum members for building and other structures shall conform to the standard set forth in Section 2003.2 and as otherwise set forth herein.

**2003.6.2** Reserved. ~~The use of aluminum alloys, other than those listed in the standard shall provide performance not less than those required by the standard and as set forth herein.~~

**2003.6.3** Aluminum members shall be limited by the deflections set forth in Section 1616~~5~~.3.

**2003.7** The building official may require that any structure using aluminum primary or secondary members be designed by a Florida-registered professional engineer.

**2003.7.1** Reserved.

**2003.7.2** In addition to flexural and shearing stresses, the critical factors of buckling, fatigue, stress raisers such as notches or holes or shape re-entrant corners, deflection and connections shall be considered and provided for by proper design.

**2003.7.3** All solid roof systems shall be designed for a minimum 30 psf (1436 Pa) live load.

**2003.7.4** All buildings and structures shall be designed to resist uplift. In the case of placement on existing slabs and foundations, sufficient information and calculations shall be provided by the professional engineer and/or architect to verify the ability of the slab or foundation to resist uplift loads.

**2003.7.5** All connection devices shall be rated by load testing by an approved testing laboratory.

**2003.7.5.1** All expansion anchors shall not be installed less than 3 inches (76 mm) from the edge of concrete slab and/or footings. All expansion anchors shall develop an ultimate withdrawal resisting force equal to four times the imposed load, with no stress increase for duration of load.

**2003.8 Fabrication and construction details.**

**2003.8.1 Connections.** Aluminum members shall be designed as set forth in the standards in Section 2003.2.

**2003.8.1.1 Fasteners.** Bolts and other fasteners shall be aluminum, stainless steel, hot-dip or electro-galvanized steel. Double cadmium plated steel bolts may also be used.

**2003.8.1.2 Painting.** Reserved.~~Except as prescribed in Section 2003.8.4, painting or coating of aluminum alloy parts shall be required only when called for on the plans.~~

**2003.8.1.3 Welding.** Aluminum parts shall be welded with an inert-gas-shielded arc or resistance welding process. No welding process that requires a welding flux shall be used. Filler alloys complying with the requirements of the standard in this chapter shall be used.

**2003.8.1.4 Welder qualifications.** All welding of structural aluminum member shall be performed by certified welders.

**2003.8.1.5 Erection.** During erection, structural aluminum shall be adequately braced and fastened to resist dead, wind and erection loads.

**2003.8.2 Structural aluminum decking and siding.**

**2003.8.2.1** Aluminum sections spanning between supports shall be limited in span to satisfactorily support the positive and negative loads set forth in Chapter 16 (High- Velocity Hurricane Zones). The deflection of decking shall not exceed that set forth in Section 1616~~3~~.

**2003.8.2.2** Aluminum sheet used for roof decking or siding shall be not less than 0.032 inch (0.8 mm) in thickness.

**2003.8.2.3** Aluminum sheets shall be secured to the supports to adequately resist positive and negative loads. Attachments shall be at intervals not exceeding 8 inches (203 mm) o.c. and shall be secured to each other at side laps at intervals as required by rational analysis and/or tests, but shall not exceed 12 inches (305 mm) o.c.

**2003.8.2.4** Fasteners shall have a head, and/or be provided with washers not less than 1/2 inch (13 mm) in diameter.

**2003.8.2.5** Fasteners located at end laps shall be placed not more than 2 inches (51 mm) nor less than 1 inch (25 mm) from the end of overlapping sheets.

**2003.8.2.6** Where roof or wall cladding is of aluminum, an approved membrane to protect against water intrusion to the interior shall be provided or the aluminum cladding shall be designed and constructed with an approved continuous edge-interlock, overlap or seam to prevent water intrusion.

**2003.8.3** Nonstructural aluminum decking and siding.

**2003.8.3.1** Nonstructural aluminum sheets shall be backed with cladding as set forth in Chapter 23 and Chapter 24 (High-Velocity Hurricane Zones).

**2003.8.3.2** Nonstructural aluminum sheets shall have a minimum thickness of 0.032 inches (0.8 mm).

**2003.8.3.3** Reserved. ~~An approved membrane to protect against water intrusion shall be provided or the aluminum cladding shall be designed and constructed with an approved continuous edge-interlock, overlap or seam to prevent water intrusion.~~

**2003.8.3.4** Nonstructural decking and siding shall be attached as set forth in Section 2003.8.2 except that the attachment of aluminum residential siding shall be by rational analysis and/or tests using a minimum 0.120-inch (3 mm) diameter aluminum nails of sufficient length to penetrate studs a minimum of 2 inches (51 mm). Nails at wood studs shall be as required by rational analysis and/or tests, but spaced not greater than 24 inches (610 mm) o.c. horizontally and no greater than 8 inches (203 mm) o.c. vertically.

**2003.8.4 Dissimilar materials.** Reserved.

**~~2003.8.4.1~~** ~~Aluminum may contact compatible metals such as, but not limited to:~~

~~1.            Nonmagnetic stainless steel provided the contacting surfaces and any attachments are enclosed for protection from the weather.~~

~~2.            Zinc.~~

~~3.            White bronze.~~

**~~2003.8.4.2~~** ~~Aluminum contacting metals not considered compatible shall be protected as follows:~~

~~1.            Painting the dissimilar metal with a prime coat of zinc-chromate primer or other suitable primer, followed by one or two coats of aluminum metal-and-masonry paint or other suitable protective coating, excluding those containing lead pigmentation.~~

~~2.            Painting the dissimilar metal with a coating of a heavy-bodied bituminous paint.~~

~~3.            Placing a good quality caulking material between the aluminum and the dissimilar metal.~~

~~4.            Applying a nonabsorptive tape or gasket.~~

~~5.            Hot-dip galvanizing or zinc-plating steel members after fabrication.~~

**~~2003.8.4.3~~** ~~Dissimilar metals shall be painted if used in locations where drainage from them passes over aluminum.~~

**~~2003.8.4.4~~** ~~Aluminum surfaces in contact with lime-mortar, concrete, or other masonry materials, shall be protected with alkali-resistant coatings, such as heavy-bodied bituminous paint or water-white methacrylate lacquer.~~

**~~2003.8.4.5~~** ~~Aluminum in contact with wood or other absorbing materials which may become repeatedly wet shall be painted with two coats of aluminum metal-and-masonry paint or a coat of heavy-bodied bituminous paint, or the wood or other absorbing material shall be painted with two coats of aluminum house paint and the joints sealed with a good quality caulking compound.~~

**~~2003.8.4.6~~** ~~Where aluminum is in contact with treated wood, wood shall be treated with pentachlorophenol, 5 percent minimum concentration, creosote, or zinc naphthanate, following the protective measures outlined in Section 2003.8.4.5.~~

**2003.8.5 Expansion and contraction**. Reserved ~~Aluminum work shall be designed and anchored so the work will not be distorted nor the fasteners overstressed from the expansion and contraction of the metal.~~

**2003.9 Sunrooms**

**2003.9.1 Wind Loads:** Basic wind speed in miles per hour (mph) shall be determined in accordance with Section 1620. Sunrooms including exposed structures, components, cladding, and roof covering shall be designed to resist the wind loads as established in Section 1620.1.

**2003.9.2 ~~R4403.11.2~~ Sunroom Categories.** Sunrooms shall be categorized in one of the following categories by the permit applicant, design professional, or the property owner where the sunroom is being constructed:

Category I: A roof or a covering of an outdoor space. The openings shall be permitted to be enclosed with insect screening or 0.5 mm (20 mil) maximum thickness plastic film. The space is defined as nonhabitable and unconditioned.

Category II: A roof or a covering of an outdoor space with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The space is defined as nonhabitable and unconditioned.

Category III: A roof or a covering of an outdoor space with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The sunroom complies with additional requirements for forced-entry resistance, air-leakage resistance and water-penetration resistance. The space is defined as nonhabitable and unconditioned.

Category IV: A roof or a covering of an outdoor space with enclosed walls. The sunroom is designed to be heated and/or cooled by a separate temperature control or system and is thermally isolated from the primary structure. The sunroom complies with additional requirements for forced-entry resistance, water penetration resistance, air-leakage resistance, and thermal performance. The space is defined as habitable and conditioned.

Category V: A roof or a covering of an outdoor space with enclosed walls. The sunroom is designed to be heated and/or cooled and is open to the main structure. The sunroom complies with additional requirements for forced-entry resistance, water-penetration resistance, air-leakage resistance, and thermal performance. The space is defines as habitable and conditioned.

~~Category I: A roof or a covering of an outdoor space. The openings shall be permitted to be enclosed with insect screening or 0.5 mm (20 mil) maximum thickness plastic film. The space is defined as non-habitable and unconditioned.~~

~~Category II: A roof or a covering of an outdoor space with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The space is defined as non-habitable and unconditioned.~~

~~Category III: A roof or a covering of an outdoor space with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The sunroom complies with additional requirements for forced-entry resistance, air-leakage resistance and water-penetration resistance. The space is defined as non-habitable and unconditioned.~~

~~Category IV: A roof or a covering of an outdoor space with enclosed walls. The sunroom is designed to be heated and/or cooled by a separate temperature control or system and is thermally isolated from the primary structure. The sunroom complies with additional requirements for forced-entry resistance, water penetration resistance, air-leakage resistance, and thermal performance. The space is defined as habitable and conditioned.~~

~~Category V: A roof or a covering of an outdoor space with enclosed walls. The sunroom is designed to be heated and/or cooled and is open to the main structure. The sunroom complies with additional requirements for forced-entry resistance, water-penetration resistance, air-leakage resistance, and thermal performance. The space is defines as habitable and conditioned~~.

**Chapter 21 – Masonry**

***Section 2101 – General. Change Section 2101.1 to read as shown:***

**2101.1 Scope.** This chapter shall govern the materials, design, construction and quality of masonry.

**Exception:** Buildings and structures located within the high-velocity hurricane zone shall comply with the provisions of Sections 2103-2105, 2107, 2108, 2110, 2114 and Sections 2119 through 2122.

***Section 2101 – General. Change Section 2101.2.3 to read as shown:***

**2101.2.3 Prestressed masonry.** Prestressed masonry shall be designed in accordance with Chapters 1 and 4 of TMS 402/ACI 530/ASCE 5 and Section 2106. *~~Special inspection~~* ~~during construction shall be provided as set forth in Section 1705.4.~~

***Section 2107 – Allowable Stress Design. Section 2107.1. Change to read as shown:***

**2107.1 General.** The design of masonry structures using *allowable stress design* shall comply with Section 2106 and the requirements of Chapters 1 and 2 of TMS 402/ACI 530/ASCE 5 except as modified by Sections 2107.2 through 2107.4.

**Exception:** Where plan review and inspections are performed by a local building department in accordance with Sections 107 and 110, the provisions of TMS 402/ACI 530/ASCE 5, Chapter 1, Section 1.19 and TMS 602/ ACI 530.1/ASCE 6 Section 1.6 shall not apply unless specified by the architect or engineer, or the building official.

***Section 2107 – Allowable Stress Design. Change Section 2107.2 to read as shown:***

**2107.2 TMS 402/ACI 530/ASCE 5, Section 2.1. ~~8~~  7 .7.1.1, lap splices.** In ~~lieu of~~ addition to Section 2.1. ~~8~~ .7.7.1.1, it shall be permitted to design lap splices in accordance with Section 2107.2.1.

***Section 2107 – Allowable Stress Design. Change Section 2107.4 to read as shown:***

**2107.4 TMS 402/ACI 530/ASCE 5, Section 2.3.7, maximum bar size.** Reserved.

***Section 2107 – Allowable Stress Design. Add Section 2107.5 to read as shown:***

**2107.5 TMS 402/ACI 530/ASCE 5, Section 2.1.7 .3, Development of bars in tension and compression.** Modify Section 2.1.7.3 as follows:

**2.1.7.3** The required development length of reinforcing bars shall be determined by Equation (2- 12), but shall not be less than 12 in. (305 mm), but need not be greater than 72 db.

Equation 2-12 from TMS 402/ACI 530/ASCE 5, unchanged. Gamma factors are changed as follows:

y         =          1.0 for No. 3 (M#10) through No. 5 (M#16) bars;

y          =          ~~1.3~~ 1.04 for No. 6 (M#19) through No. 7 (M#22) bars; and

y          =          ~~1.5~~ 1.2 for No. 8 (M#25) through No. 11 (M#36) bars

***Section 2107 – Allowable Stress Design. Add Section 2107.6 to read as shown:***

**2107.6 TMS 402/ACI 530/ASCE 5, Section 1.15 Pilasters.** Modify Section 1.15 as follows:

1.15.1 Where vertical reinforcement is provided to resist axial compressive stress, lateral ties shall meet all applicable requirements of Section 1.14.1.4.

***Section 2108 – Strength Design of Masonry. Change Section 2108.1 to read as shown:***

|  |
| --- |
|  |
| **2108.1 General.** The design of masonry structures using strength design shall comply with Section 2106 and the requirements of Chapters 1 and 3 of TMS 402/ACI 530/ASCE, except as modified by Section 2108.2 through 2108.3.  **Exceptions**:  1.     AAC masonry shall comply with the requirements of Chapters 1 and 8 of TMS 402/ACI 530/ASCE 5.   2.     Where plan review and inspections are performed by a local building department in accordance with Sections 107 and 110, the provisions of TMS 402/ACI 530/ASCE 5, Chapter 1, Section 1.19 and TMS 602/ ACI 530.1/ASCE 6 Section 1.6 shall not apply unless specified by the architect or engineer, or the building official. |

***Section 2108 – Strength Design of Masonry. Add Section 2108.4 to read as shown:***

**2108.4 TMS 402/ACI 530/ASCE 5, Section 2.1.7.3, Development of bars in tension and compression.** Modify Section 2.1.7.3 as follows:

2.1.7.3 The required development length of reinforcing bars shall be determined by Equation (2- 12), but shall not be less than 12 in. (305 mm), but need not be greater than 72 db.

Equation 2-12 from TMS 402/ACI 530/ASCE 5, unchanged. Gamma factors are changed as follows:

y          =          1.0 for No. 3 (M#10) through No. 5 (M#16) bars;

y          =          ~~1.3~~ 1.04 for No. 6 (M#19) through No. 7 (M#22) bars; and

y          =          ~~1.5~~ 1.2 for No. 8 (M#25) through No. 11 (M#36) bars

***Section 2109 – Empirical Design of Masonry. Change Section 2109.1.1 to read as shown:***

**2109.1.1 Limitations.** The use of empirical design of masonry shall be limited as noted in Section 5.1.2 of TMS 402/ACI 530/ASCE 5. The use of dry-stacked, surface-bonded masonry shall be prohibited in *Risk Category* IV structures. In buildings that exceed one or more of the limitations of Section 5.1.2 of TMS 402/ACI 530/ASCE 5, masonry shall be designed in accordance with the engineered design provisions of Section 2101.2.1, 2101.2.2 or 2101.2.3 or the foundation wall provisions of Section 1807.1.5.

Section 5.1.2.2 of TMS 402/ACI 530/ASCE 5 shall be modified as follows:

**5.1.2.2** *Wind*  – Empirical requirements shall not apply to the design or construction of masonry for buildings, parts of buildings, or other structures to be located in areas where V*ult* *~~V~~~~asd~~*as determined in accordance with Figures 1609A, 1609B, or 1609C ~~Section 1609.3.1~~ of the *Florida Building Code, Building ~~International Building Code~~* exceeds 115 ~~110~~ mph.

***Section 2114 – Termite Inspection. Add Section 2114 to read as shown:***

**SECTION 2114**

**TERMITE INSPECTION**

**2114.1 Cleaning.**  Cells and cavities in masonry units and air gaps between brick, stone or masonry veneers and the structure shall be cleaned of all nonpreservative treated or nonnaturally 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.

**2114.2 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 shelf, angle or lintel secured to the foundation sidewall in accordance with TMS 402/ 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.

***Section 2115 – Special Wind Provisions for Masonry. Add Section 2115 to read as shown:***

**SECTION 2115**

**SPECIAL WIND PROVISIONS FOR MASONRY**

**2115.1 Gable endwalls.**

**2115.1.1 General**. Gable endwalls shall be structurally continuous between points of lateral support.

**2115.1.2 Cathedral endwalls.** Gable endwalls adjacent to cathedral ceilings shall be structurally continuous from the uppermost floor to the ceiling diaphragm or to the roof diaphragm.

***Section 2118-2122 High-Velocity Hurricane Zones—Design. Add to read as shown***

**SECTION 2118**

**HIGH-VELOCITY HURRICANE ZONES-**

**DESIGN**

**RESERVED**

**~~2118.1~~** ~~Masonry shall be designed by a method admitting of rational analysis based on established principles of mechanics.~~

**SECTION 2119**

**HIGH-VELOCITY HURRICANE ZONES-**

**QUALITY, TESTS, AND APPROVALS**

**2119.1 Quality.** Reserved**.** ~~The quality of materials assembled into masonry and the method and manner of their assembly shall conform to the requirements of this chapter.~~

**~~2119.1.1 Workmanship.~~** ~~Masonry construction shall be in conformance with the tolerances, quality and methods of construction as set forth in standards referenced in this chapter; the Portland Cement Association Concrete Masonry Handbook, ANSI A41.1, A41.2 and AWS Structural Welding Code: Reinforcing Steel (D1.4).~~

**~~2119.1.2 Other materials.~~** ~~A material of masonry, other than set forth herein, which is incombustible and otherwise sufficiently embodies the characteristics and satisfies the requirements of one of the materials herein may be approved by the building official, subject to such tests as may be prescribed.~~

**2119.2 Tests.** Reserved

**~~2119.2.1~~** ~~The building official may require materials to be subjected to tests to determine their quality whenever there is reason to believe that a material is no longer up to the standards on which the approval was based. The cost of such tests shall be borne by the person or persons proposing to use or continue to use such material or product.~~

**~~2119.2.2~~** ~~Materials shall be tested in accordance with the standard specifications of the ASTM International as such standard specifications are noted in this chapter.~~

**2119.3 Approvals.**

**2119.3.1** Only such masonry units ~~as~~ that bear the approval of the building official and are manufactured or fabricated by plants having a certificate of competency issued by the authority having jurisdiction, shall be considered acceptable for the construction of buildings or other structures.

**2119.3.2** Approval of masonry units and manufacturing or fabricating plants shall be for periods not to exceed one year and may be obtained upon application and the submission of certificates of tests in accordance with the provisions of this chapter.

**2119.3.3** The provisions for tests for approval of masonry units shall not be construed as in lieu of any tests otherwise required under this chapter.

**2119.3.4** Failure of a manufacturer of masonry units to obtain approval or to submit tests as required in this chapter, or such additional tests as the building official may require, shall be cause for rejection of such masonry units.

**2119.4 Brick.** Reserved.

**~~2119.4.1 General.~~** ~~Brick shall include masonry units usually 21/4 inches (57 mm) thick, 33/4 inches (95 mm) wide, and 8 inches (203 mm) long, and not less than 75 percent solid.~~

**~~2119.4.2 Tests.~~** ~~Tests shall be conducted in accordance with Standard Methods of Testing Brick , ASTM C 67.~~

**~~2119.4.3 Quality.~~**

**~~2119.4.3.1~~** ~~Burned clay or shale brick shall conform to either the standard Specification for Building Brick (Solid Masonry Units made from Clay or Shale) , ASTM C 62, the standard Specification for Facing Brick (Solid Masonry Units made from Clay or Shale), ASTM C 216 or the standard Specification for Hollow Brick (Hollow Masonry Units made from Clay or Shale), ASTM C 652.~~

**~~2119.4.3.2~~** ~~Sand-lime brick shall conform to the Standard Specification for Concrete Building Brick, ASTM C 55.~~

**~~2119.4.3.3~~** ~~Concrete brick shall conform to the Standard Specification for Concrete Building Brick , ASTM C 55.~~

**2119.5 Stone.** Reserved**.** ~~Stone for masonry shall be hard and durable.~~

**2119.6 Cast stone.** Reserved**.** ~~Cast stone shall be made of portland cement, aggregates and water with or without admixtures. Cast stone for load-bearing masonry or where exposed to the weather shall have an average compressive strength, at 28 days, of at least 3,000 pounds psi (20.7 MPa) and shall have not more than 7 percent water absorption by weight.~~

**2119.7 Concrete blocks.** Reserved.

**~~2119.7.1 General.~~**

**~~2119.7.1.1~~** ~~Concrete blocks shall be made of portland cement, water and approved aggregates. The materials shall conform to the requirements for the materials of concrete specified in Chapter 19 (High-Velocity Hurricane Zones), and the finished units shall meet the requirements of this section.~~

**~~2119.7.1.2~~** ~~Concrete blocks used for fire-resistive walls rated 2 hours or more, or used for load-bearing or exterior walls, shall have a minimum face shell thickness of 11/4 inches (32 mm), a minimum web thickness of 1 inch (25.4 mm), and shall have a net cross-sectional area not less than 50 percent of the gross section.~~

**~~2119.7.1.3~~** ~~Concrete blocks for other purposes shall have wall and web thickness of not less than 3/4 inch (19 mm).~~

**~~2119.7.1.4~~** ~~Where masonry walls are required by this code to be 8 inch (203 mm) thickness, hollow concrete blocks units may be 75/8 by 75/8 by 155/8 inches (195 by 195 by 398 mm) modular dimension with corresponding widths for tie columns and tie beams.~~

**~~2119.7.2 Quality.~~** ~~Standard units of hollow concrete block shall conform to the Standard Specification for Hollow Load-Bearing Concrete Masonry Units, ASTM C 90, except that the maximum moisture content shall not exceed 50 percent of the total absorption.~~

**2119.8 Structural clay tile.** Reserved.

**~~2119.8.1 Limitations.~~** ~~All hollow burned clay wall tile used for fire-resistive walls rated 2 hours or more, load-bearing or exterior walls shall be load bearing tile.~~

**~~2119.8.2 Tests.~~** ~~Tests shall be conducted in accordance with the Standard Methods of Sampling and Testing Structural Clay Tile, ASTM C 212.~~

**~~2119.8.3 Quality.~~**

**~~2119.8.3.1~~** ~~Structural clay load-bearing wall tile shall conform to the Standard Specification of Structural Clay Load-Bearing Wall Tile, ASTM C 34.~~

**~~2119.8.3.2~~** ~~Structural clay floor tile shall conform to the Standard Specification for Structural Clay Floor Tile, ASTM C 57.~~

**~~2119.8.3.3~~** ~~Structural clay nonload-bearing tile shall conform to the Standard Specification for Structural Clay NonLoad-Bearing Tile, ASTM C 56.~~

**2119.9 Gypsum tile.** Reserved.

**~~2119.9.1 Limitations.~~** ~~Precast gypsum shall not be used in load-bearing masonry or in any masonry that will be exposed to the weather.~~

**~~2119.9.2 Tests.~~** ~~Tests shall be made in accordance with the Chemical Analysis of Testing Gypsum and Gypsum Products, ASTM C 471, Physical Testing of Gypsum Plasters and Gypsum Cement, ASTM C 472, and Physical Testing of Gypsum Board Products and Gypsum Partition Tile and Block, ASTM C 473.~~

**~~2119.9.3 Quality.~~** ~~Gypsum partition tile or block shall conform to the Standard Specification for Gypsum Tile or Block, ASTM C 52, Chemical Analysis of Testing Gypsum and Gypsum Products, ASTM C 471, Physical Testing of Gypsum Plasters and Gypsum Cement, ASTM C 472, and Physical Testing of Gypsum Board Products and Partition Tile and Block, ASTM C 473.~~

**2119.10 Plain concrete.** Reserved. ~~Plain concrete is concrete cast in place and not reinforced, or reinforced only for shrinkage or change of temperature. Plain concrete shall be mixed, placed and cured as specified for concrete in Chapter 19 (High-Velocity Hurricane Zones). The minimum strength of regular concrete shall~~ ~~be not less than 2000 psi (13.8 MPa) in 28 days. The minimum strength of lightweight aggregate concrete shall be not less than 500 psi (3.5 MPa) in 28 days.~~

**2119.11 Plain gypsum concrete.** Reserved **.**~~Plain gypsum concrete is gypsum concrete cast in place and either unreinforced or reinforced for shrinkage.~~

**2119.12 Mortar**. Reserved

**~~2119.12.1 General.~~** ~~Except as otherwise set forth herein, all mortars and the materials therein shall conform to the Standard Specifications for Mortar of Masonry Units , ASTM C 270.~~

**~~2119.12.1.1~~** ~~The gradation of aggregates for masonry mortar shall be such that the fineness modulus is between 1.20 and 2.35 when determined in accordance with the Standard Specifications for Aggregate for Masonry Mortar, ASTM C 144.~~

**~~2119.12.1.2~~** ~~Aggregates shall be quarried or washed in fresh water and shall contain not more than 1/20 of 1 percent salt by weight.~~

**~~MORTAR STRENGTH PROPERTY SPECIFICATIONS~~**

|  |  |
| --- | --- |
| **~~Type~~** | **~~Minimum Average Strength (psi) (MPa)~~** |
| ~~M S N O~~ | ~~2500 (17.2) 1800 (12.4) 750 (5.2) 350 (2.4)~~ |

**~~2119.12.1.3~~** ~~Mortar used to bond unit masonry shall be of Type M, S, N or O and shall comply with either the property specifications set forth hereinafter or the proportion specifications of the standard set forth in Section 2119.12.1.~~

**~~2119.12.1.4~~** ~~The type of mortar based on consideration of the location of the unit masonry shall be as follows:~~

|  |  |  |
| --- | --- | --- |
| **~~USE OF LOCATION~~** | | **~~TYPE OF MORTAR~~** |
| ~~Below grade foundations and walls Swimming pool walls and retaining walls Fire resistive walls rated 2 hours or more Exterior walls and load bearing walls Piers less than 32 inches wide Partitions Solid masonry units   Mortar or grout under concentrated loads Fences Gypsum~~ | | ~~M M M or S M or S M or S M, S or N One classification less than that above   M M, S, N or O Gypsum~~ |
| ~~For SI: 1 inch = 25.4 mm.~~ | |

**~~2119.12.1.5~~** ~~All solid unit masonry shall be laid in full beds with full end joints. All hollow unit masonry shall be laid with full mortar coverage of the face shells in both horizontal and vertical joints.~~

***Section 2120 High-Velocity Hurricane Zones – Allowable Unit Stresses In Unit Masonry. Modify section 2120 to read as shown:***

**SECTION 2120**

**HIGH-VELOCITY HURRICANE ZONES-**

**ALLOWABLE UNIT STRESSES IN UNIT MASONRY**

**RESERVED**

**~~2120.1 Compression.~~**

**~~2120.1.1~~** ~~Allowable working compressive stresses in masonry walls shall not exceed the limits in pounds per square inch (MPa) of gross area in the following table:~~

|  |  |  |
| --- | --- | --- |
| **~~Unit~~** | **~~Type N or O Mortar~~** | **~~Type M or S Mortar~~** |
| ~~Brick Stone Rubble Stone Concrete Blocks Clay Tile~~ | ~~200 (1.4) 450 (3.1) 200 (1.4) 100 (0.7) 80 (0.55)~~ | ~~300 (2.1) 600 (4.1) 300 (2.1) 150 (1.0) 100 (0.7)~~ |

**~~2120.1.2~~** ~~The maximum allowable working stress in plain concrete shall be the following percentage of the ultimate strength of the concrete in compression:~~

~~Compression 0.20 f 'c~~

~~Shear and diagonal tension 0.02 f 'c~~

~~Where f 'c represents the ultimate compressive strength.~~

**~~2120.2~~** ~~The shear in unit masonry shall not exceed 1/10 the allowable compressive stress.~~

**~~2120.3~~** ~~Unreinforced unit masonry shall be assumed to have no value in resisting axial tension. Flexural tension is allowed in unreinforced masonry per ACI 530.~~

**~~2120.4 Concentrations.~~** ~~Walls of hollow masonry units shall not directly support concentrated loads.~~

***Section 2121 High-Velocity Hurricane Zones – Construction Details. Modify section 2121 to read as shown:***

**SECTION 2121**

**HIGH-VELOCITY HURRICANE ZONES-**

**CONSTRUCTION DETAILS**

**2121.1 General.**

**2121.1.1** Reserved.~~Masonry walls of hollow or solid units or plain concrete shall be constructed as specified in this section.~~

**2121.1.2**Reserved. ~~Designed reinforced concrete walls, columns and beams shall be as specified in Chapter 19 (High-Velocity Hurricane Zones), except that such designed columns and beams shall be not less than the equivalent of the minimums herein set forth.~~

**2121.1.3**Reserved. ~~Reinforced concrete required in this section shall comply with Chapter 19 (High-Velocity Hurricane Zones), Reinforced Concrete.~~

**2121.1.4**Reserved. ~~Second-hand masonry units shall not be used unless they conform to the requirements of this code, are sound and have been thoroughly cleaned and are approved for use by the building official.~~

**2121.1.5**Reserved. ~~Bond shall be provided by lapping ends in successive vertical courses.~~

**2121.1.6** Minimum No. 9 gauge truss type horizontal joint reinforcing at every alternate course (16-inch (406 mm) spacing), shall be provided. This reinforcement shall extend 4 inches (102 mm) into tie columns or be tied to structural columns with approved methods where structural columns replace the tie columns. In addition, horizontal joint reinforcement shall comply with TMS602/ACI530.1/ASCE 6 Sections 2.4C thru 2.4F and Section 3.4B.7.

**2121.2 Exterior walls.**

**2121.2.1 General.**

**2121.2.1.1** Exterior walls of unit masonry shall have a minimum thickness of 8 inches (203 mm) except as otherwise set forth in Section 2121.2.11 and 2119.7.1.4.

**2121.2.1.2** No roof or other members shall be placed to develop direct horizontal thrust on walls unless such walls are specifically designed.

**2121.2.1.3** The maximum area of wall panels of 8 inch (203 mm) thick unit masonry, as measured between the concrete members which frame the panel such as the beams and tie columns, shall not exceed 240 square feet (22.3 m2), except as set forth in Section 2121.2.2.

**2121.2.2 Tie columns.**

**2121.2.2.1** Concrete tie columns shall be required in exterior walls of unit masonry. Concrete tie columns shall be required at all corners, at intervals not to exceed 16 feet (4.9 m) center-to-center of columns, adjacent to any corner opening exceeding 4 feet (1219 mm) in width, and at the ends of free-standing walls exceeding 2 feet (610 mm) in length. When openings exceed 8 feet (2.4 m) in width, tie columns shall be provided on each side of all such openings. All gable and shed end corners shall have tie columns.

**2121.2.2.2** When openings are between 3 and 8 feet (914 mm and 2.4 m) in width, such openings shall have one #5 vertical reinforcing bar at each side. The vertical bars shall be placed in concrete filled cells and shall extend into footings and into tie beams. All such bars shall be continuous from footing to tie beam. All splices, where needed, shall be 30 inches (762 mm) minimum.

**2121.2.2.3** Tie columns shall be not less than 12 inches (305 mm) in width. Tie columns having an unbraced height not exceeding 15 feet (4.6 m) shall be not less in thickness than the wall or less than a nominal 8 inches (203 mm), and, where exceeding 15 feet (4.6 m) in unbraced height, shall be not less in thickness than 12 inches (305 mm). The unbraced height shall be taken at the point of positive lateral support in the direction of consideration or the column may be designed to resist applicable lateral loads based on rational analysis.

**2121.2.2.4** Tie columns shall be reinforced with not less than four #5 vertical bars for 8 inch by 12 inch (203 mm by 305 mm) columns nor less than four #6 vertical bars for 12 inch by 12 inch (305 mm by 305 mm) columns nor less reinforcing steel than 0.01 of the cross-sectional area for columns of other dimension nor less than may be required to resist axial loads or bending forces. Vertical reinforcing shall be doweled to the footing and splices shall be lapped 30 bar diameters. Columns shall be tied with #2 hoops spaced not more than 12 inches (305 mm) apart.

**2121.2.2.5** The concrete tie columns set forth herein are a minimum to limit masonry panel areas and provide an integrated framework for masonry. The spacing of concrete columns for skeleton frame construction, designed as specified in Chapter 19 (High-Velocity Hurricane Zones), may exceed the spacing herein set forth provided the masonry panels have an area less than 240 square feet (22.3 m2) and the structural system is designed to transmit horizontal wind loads to the columns.

**2121.2.2.6** Concrete tie columns designed to limit masonry panel areas may be offset at tie beams or other horizontal members to avoid openings, but the maximum spacing shall not be exceeded.

**2121.2.2.7** Concrete columns in load-bearing walls shall be poured only after masonry units are in place. Where masonry walls of skeleton frame construction are laid up after the frame has been erected, adequate anchorage designed by a professional engineer shall be provided. Where structural steel members are made fire-resistive with masonry units, the panel walls shall be bonded to the fire-resistive materials.

**2121.2.2.8** Where the minimum spacing of tie columns, as set forth in Section 2121.2.2.1, has been satisfied and structural columns of skeleton frame construction are spaced as specified in Section 2121.2.2.5, provision for resisting the horizontal and vertical loads at the edges of masonry panels abutting door and window openings in masonry walls where openings are not bounded by such reinforced concrete columns shall be considered and, where necessary, transfer the forces through the materials of assembly to the ground.

**2121.2.3 Tie beams.**

**2121.2.3.1** A tie beam of reinforced concrete shall be placed in all walls of unit masonry, at each floor or roof level, and at such intermediate levels as may be required to limit the vertical heights of the masonry units to 16 feet (4.9 m). Well-compacted and confined soil below grade may be considered lateral restraint but only above a point 1 foot (305 mm) below the grade where such restraint begins.

**2121.2.3.2** Unless otherwise required by design, all tie beams shall have four #3 ties at 12 inches (305 mm) o.c. at corners and at each bend and at 48 inches (1219 mm) o.c. elsewhere. A tie beam shall be not less in dimension or reinforcing than required for the conditions of loading nor less than the following minimums: a tie beam shall have a width of not less than a nominal 8 inches (203 mm), shall have a height of not less than 12 inches (305 mm) and shall be reinforced with not less than four #5 reinforcing bars placed two at the top and two at the bottom of the beam except that a tie beam using "U" type beam block may be used with the following limitations:

1. Limited to one-story Group R3 occupancy.

2. Limited to unsupported spans of 7 feet (2.1 m).

3. Beam block shall be reinforced with one #7 bar in the top and one #7 bar in the bottom of the pour.

4. Beam block shall provide not less than 14 inches (356 mm) vertical dimension or less than 41/2 inches (114 mm) horizontal dimension of poured-in-place beam cross-section.

5. Where beam blocks are used, consideration of resistance to uplift caused by wind forces shall be based on only that portion of the dead load above the topmost mortar joint in the wall.

**2121.2.3.3** The tie beam shall be continuous. Continuity of the reinforcing in straight runs shall be provided by lapping splices not less than 30 inches (762 mm). Continuity shall be provided at corners by bending two bars from each direction around the corner 30 inches (762 mm) or by adding two #5 bent bars which extend 30 inches (762 mm) each way from the corner. Continuity at columns shall be provided by continuing horizontal reinforcing through columns or by bending horizontal reinforcing in the columns a distance of 18 inches (457 mm).

**2121.2.3.4** A tie beam shall not be required where floor or roof systems provide a rigid diaphragm of reinforced concrete with a minimum thickness of 4 inches (102 mm) or where a floor or roof system has an equivalent stiffness factor of not less than 0.5 cubic inches, as determined by the moment of inertia divided by the length. (Per foot of width, measured normal to the plane of the diaphragm and adequately anchored).

**2121.2.3.5** Changes in level of the beams or structural concrete beams (beam) shall be made at tie columns or structural concrete columns and said tie columns or structural concrete columns shall be continuous from beam to beam.

**2121.2.3.6** A tie beam may follow the rake of a gable or shed end if the slope does not exceed 3:12 and the requirements of Sections 2121.2.1.2 and 2121.2.1.3 are met.

**2121.2.3.7** The concrete in tie beams shall be placed to bond to the masonry units immediately below and shall not be separated therefrom by wood, felt or any other material which may prevent bond. Felt paper no wider than the width of the cells of the block may be used provided that it is depressed a minimum of 2 inches (51 mm) in one cell of each block.

**2121.2.3.8** Tie beams subject to uplift and lateral wind forces shall be sized and designed to resist all such forces. Tie beams over openings shall be sized and designed to resist dead and live loads combined with wind loads, whichever governs.

**2121.2.4 Gable end and shed end walls.** All masonry structures with gable end and shed end (half gable) walls shall have such end walls constructed of masonry, only in accordance with this section. A horizontal tie beam shall be provided in line with the lower ends of the gables and sheds, except as permitted in Section 2121.2.3.6 above, and designed in accordance with Sections 2121.2.1.2 and 2121.2.1.3, and load requirements as set forth in Chapter 16 (High-Velocity Hurricane Zones). A concrete coping following the rake of the gable, not less than 64 square inches (.04 m2) in area reinforced with two #5 bars shall be provided. Tie columns at gable and shed ends shall be provided. Any intermediate tie columns required within the gable shall extend to the coping beam. Tie beams resting on masonry which are not subject to uplift and lateral wind forces shall be provided according to Section 2121.2.3.2.

**2121.2.5 Parapet walls.**

**2121.2.5.1** Masonry parapet walls shall be not less than 8 inches (203 mm) thick, shall be reinforced with minimum tie columns and shall be coped with a concrete beam not less than 64 square inches (.04 m2) in cross-section, reinforced with two #4 reinforcing bars.

**2121.2.5.2** A parapet wall exceeding 5 feet (1524 mm) in height above a tie beam or other point of lateral support shall be specifically designed to resist horizontal wind loads.

**2121.2.6 Piers.**

**2121.2.6.1** In any section of a masonry wall of an enclosed structure where openings are arranged to leave sections of walls less than 16 inches (406 mm), such sections shall be steel or reinforced concrete.

**2121.2.6.2** Isolated masonry piers of unenclosed structures shall be so constructed that the height of such piers shall not exceed 10 times the least dimension, that the cells are filled with cement grout and reinforced with not less than two #5 bars anchoring the beam to the foundation.

**2121.2.7 Cavity walls.**

**2121.2.7.1** Cavity walls consisting of two separate walls with an air space of not less than 2 inches nor more than 6 inches (51 to 152 mm) may be constructed of solid or hollow-unit masonry provided such walls meet the specific requirements for tie columns and beams set forth in this section and are bonded together at intervals not more than 24 inches (610 mm) apart, vertically and horizontally, by masonry ties or by durable, rigid metal ties 0.10 square inch (64.5 mm2) in the cross section.

**2121.2.7.2** The minimum thickness of the separate walls of cavity wall construction shall be 4 inches (102 mm), and units shall be laid in full beds of portland cement mortar with full-end joints.

**2121.2.8 Brick and stone walls.** Walls of brick and stone shall be laterally supported by tie columns and beams, or the equivalent thereof, as provided in this section and shall meet these additional requirements:

1. In all brick walls at least every sixth course on both sides of the wall shall be a header course or there shall be at least one full header in every 72 square inches (.05 m2) of each wall surface.

2. In walls more than 12 inches (305 mm) thick, the inner joints of header courses shall be covered with another header course that shall break joints with the course below.

3. Solid-unit masonry shall comply with the standard Building Code Requirements for Masonry, ANSI A41.1.

4. Rubble stone walls shall be 4 inches (102 mm) thicker than is required for solid brick or concrete walls of the same respective heights, but in no part less than 16 inches (406 mm).

**2121.2.9 Substitutions.**

**2121.2.9.1** Where, for architectural reasons or otherwise, it is desirable to reduce the area of any required tie column or tie beam below the specified requirements, the building official may grant such reduction, provided that the area of concrete omitted shall be replaced by reinforcing or structural steel in the ratio 1:(n-1) where "n" is defined as the modular ratio of elasticity (esteel/econcrete).

**2121.2.9.2** Where it is desired to substitute for the #5 reinforcing as required by this section, three #4 bars may be substituted to replace two #5 bars.

**2121.2.10 Wall additions.** Where new walls are connected to existing walls, such connection shall be by means of a starter column of minimum 8 inches by 8 inches (203 mm by 203 mm) dimension reinforced with two #5 bars.

**2121.2.11 Chases, recesses and openings.**

**2121.2.11.1** Unit masonry walls required to be a minimum of 8 inches (203 mm) thick, such as exterior walls, fire walls and bearing walls, may be chased or recessed not deeper than one-half the wall thickness for an area not exceeding 8 square feet (0.74 m2), provided the horizontal dimension of the chase or recess does not exceed 4 feet (1219 mm) and provided the chasing shall not reduce the dimension of tie beams and tie columns to less than herein required, except as follows:

**Exception:** Four-inch (102 mm) deep chases or recesses in 8 inch (703 mm) unit masonry walls may be constructed with 4 inch (102 mm) unit masonry panels provided such 4 inch (102 mm) unit masonry panel does not exceed 5 feet (1524 mm) in width, does not exceed 8 feet (2.4 m) in height, is bonded on one vertical side to 8 inch (203 mm) masonry or a tie column, and is not load bearing. Where such panel exceeds 2 feet (610 mm) in width at locations 20 feet (6.1 m) or more above grade in exterior walls, resistance to wind load shall be considered in the design, and a minimum of 4 inch by 8 inch (102 mm by 203 mm) tie column with two #5 vertical bars shall be provided in the free standing end of such 4 inch (102 mm) wall.

**2121.2.11.2** Openings shall have lintels of reinforced concrete. Where such lintel is precast or formed separately from a tie beam, it shall bear not less than nominal 8 inches (203 mm) on the masonry, at each end except as may otherwise be approved for compliance with this code by product approval, or after rational analysis, but not less than 4 inches (102 mm). Where such lintel is formed integrally with the tie beam by deepening the tie beam above the opening, and the tie beam itself is capable of safely supporting all loads, the beam may span up to 6 feet (1.8 m) in length and may be deepened not to exceed 8 inches (203 mm) without additional reinforcing. Where the tie beam is deepened in excess of 8 inches (203 mm) with a span less than 6 feet (1.8 m) in length, and the tie beam itself is capable of supporting all loads, the dropped portion shall contain a #3 horizontal bar at the bottom, bent up at each end and fastened to the upper tie beam steel or two #4 horizontal bars. The dropped portion shall bear at least 4 inches (102 mm) on the masonry at each end. Where the span is in excess of 6 feet (1.8 m), the principal beam reinforcing shall be at the bottom of the beam.

**2121.2.12 Glass unit masonry.** Reserved**.** ~~Glass unit masonry shall comply with section 2121.1.12 or shall comply with ACI 530/ASCE 5/TMS 402 and section 2121.2.12.2.~~

**~~2121.2.12.1~~** ~~Masonry of glass unit masonry may be used in nonload-bearing exterior or interior walls and in openings which might otherwise be filled with windows, either isolated or in continuous bands, provided the glass unit masonry panels have a thickness of not less than 3½ inches (89 mm) at the mortar joint and the mortared surfaces of the units are satisfactorily treated for mortar bonding.~~

**~~2121.2.12.2~~** ~~Glass unit masonry panels for exterior walls shall have a Product Approval.~~

**~~2121.2.12.3~~** ~~Exterior unit masonry panels shall be set in recesses at the jambs and, for panels exceeding 10 feet (3 m) in horizontal dimension between supports, at the head as well, to provide a bearing surface at least 1 inch (25 mm) wide along the panel edges; except that when approved by the building official for panels exceeding neither 100 square feet (9.3.m2) in area nor 10 feet (3 m) in either horizontal or vertical dimension, and situated four stories or less, and less than 52 feet (15.8 m) above grade level, anchorage may be provided by means of non-corrodible perforated metal strips.~~

**~~2121.2.12.4~~** ~~Glass unit masonry panels shall have reinforcement in the mortar joints spaced not more than 2 feet (610 mm) apart vertically and below and above any openings within a pane. The reinforcement shall consist of two parallel longitudinal galvanized steel wires, No. 9 gauge or larger, spaced 2 inches (51 mm) apart, and welded to No. 14 or heavier cross wires at intervals not exceeding 8 inches (203 mm), or the equivalent approved by the building official.~~

**~~2121.2.12.5~~** ~~Glass unit masonry shall be laid in only Type M or S mortar or equivalent approved material. Both vertical and horizontal mortar joints shall be at least 1/4 inch (6 mm) and not more than 3/8 inch (9.5 mm) thick and shall be completely filled.~~

**~~2121.2.12.6~~** ~~Every exterior glass unit masonry panel shall be provided with expansion joints at the sides and top. Expansion joints shall be entirely free of mortar, and shall be filled with resilient material.~~

**~~2121.2.12.7~~** ~~Glass masonry units required to provide a fire resistance rating shall comply with Section 2121.1.12.8 or shall be fire tested and listed for their intended use.~~

**~~2121.2.12.8~~** ~~View panels in 1-hour fire-resistant walls shall be limited to glass unit masonry panels installed in steel channels, or panel anchor framing may be used where a 3/4-hour fire rating is required. Three-and-seven-eighths inch thick (98 mm) glass masonry unit shall be limited to 120 square feet (1.1 m2) with no dimension greater than 12 feet (3.7 m) for masonry wall construction or to 94 square feet (8.7 m2) with no dimension greater than 10.75 feet (3.3 m) for nonmasonry wall construction. Three and one-eighths inch (79 mm) thick glass masonry units shall be limited to 100 square feet (9.3 m2) with no dimension greater than 10 feet (3 m) for masonry wall construction or to 94 square feet (8.7 m2) with no dimension greater than 10.75 feet (3.3 m) for nonmasonry wall construction. Three inches (76 mm) thick glass masonry units shall be limited to 100 square feet (9.3 m2) with no dimension greater than 12 feet (3.7 m) for masonry wall construction or to 94 square feet (8.7 m2) with no dimension greater than 10 feet (3 m) for nonmasonry wall construction.~~

~~View panels in 2-hour fire-resistant walls shall be limited to glass masonry units installed in steel channels and with a water curtain in conformance with NFPA 13 on each side at interior walls or at the interior of exterior walls. Three and seven-eighths inch (98 mm) thick glass masonry units shall be limited to 100 square feet (9.3 m2) with no dimension greater than 10 feet (3 m).~~

~~The view panel assembly shall not exceed 25 percent of the wall separating a tenancy from a corridor or a corridor from an enclosed vertical opening or one fire-rated area from another fire-rated area.~~

~~Maximum 3/4 hour fire-rated glass masonry units construction shall be used at nonmasonry wall construction. Panel anchors shall be provided at sill and jambs in nonmasonry wall construction using panel anchor framing. A fire-retardant sealant shall be used at all channel and panel anchor framing. Expansion material at heads and jambs shall be either fibrous glass or mineral wool. All fire-rated glass masonry units and panels shall conform to UL No. 9 and ASTM E 163.~~

**~~2121.2.12.9~~** ~~Interior glass masonry unit panels having thickness of 37/8 inches (98 mm) shall not exceed 250 square feet (23.2 m2) of unsupported wall surface and interior glass masonry unit panels having thickness of 31/8 inches (79 mm) shall not exceed 150 square feet (13.9 m2) of unsupported wall surface nor more than 25 feet (7.6 m) in length nor more than 20 feet (6.1 m) in height between supports.~~

**2121.2.13 Grill block.** Reserved.

**~~2121.2.13.1~~** ~~Decorative grills or screens constructed of unit masonry laid with cells open through the wall shall be as set forth herein or designs shall be based on rational analysis to resist applicable loads and computations shall be submitted to the building official for approval.~~

**~~2121.2.13.2~~** ~~Unit masonry grills or screens as described in this paragraph shall not be load bearing.~~

**~~2121.2.13.3~~** ~~Unit masonry in exterior wall shall be laid in Type M or S mortar.~~

**2121.3 Interior bearing walls.** Reserved**.** ~~Interior-bearing walls shall be constructed as specified in Section 2121.2 for exterior walls, except that interior bearing walls in one-story building of Group H or I occupancy, where not required to be more than 1-hour fire-resistive, may be constructed of 4 inch (162 mm) concrete block not exceeding 9 feet (2.7 m) in height, capped with a reinforced concrete beam not less than 4 inches (102 mm) in width nor less than 12 inches (305 mm) in height, reinforced with two 1/2-inch (12.7 mm) rods, and such walls shall support only a roof or ceiling not in excess of 700 pounds per lineal foot (10.2 kN/m) with no chases or recesses.~~

**2121.4 Fire walls.** Reserved**.** ~~Firewalls shall be constructed as set forth in Section 2121.2 for exterior walls.~~

**2121.5 Panel walls.**

**2121.5.1** Panel walls of unit-masonry shall be not less than 8 inches (203 mm) thick and shall be limited in panel dimension as set forth in Section 2121.2.

**2121.5.2** Panel walls of reinforced concrete shall be not less than 4 inches (102 mm) thick nor less than required by design as specified in Chapter 19 (High-Velocity Hurricane Zones).

**2121.6 Veneered walls.** Reserved.

**~~2121.6.1 Masonry backing.~~**

**~~2121.6.1.1~~** ~~Veneering or facing on masonry backing shall not be considered as adding any strength to such walls and shall be limited in height above foundations or between proper and adequate supports to 30 feet (9.1 m). Veneering shall be securely anchored to masonry backing by means of substantial, noncorroding metal wall ties, spaced not farther apart than 16 inches (406 mm) vertically or 24 inches (610 mm) horizontally.~~

**~~2121.6.1.2~~** ~~Tile veneering, not more than 1 inch (25 mm) thick with individual units not exceeding 20 inches (508 mm) in any dimension and having not more than 200 square inches (.13 cm2) of surface area with corrugations or scoring on the back side thereof, need not be anchored in accordance with the above requirements but shall be cemented solid to the backing with portland cement mortar so as to provide a continuous integral support to the backing.~~

**~~2121.6.2 Wood backing.~~**

**~~2121.6.2.1~~** ~~In all cases, before applying masonry veneer, a substantial waterproofed paper or asphalt-saturated felt, weighing not less than 14 pounds per 100 square feet (0.68 kg/m2) shall be applied horizontally, shingle fashion, over diagonal sheathing. Horizontal joints in the paper or felt shall be lapped not less than 4 inches (102 mm) and vertical end joints not less than 6 inches (152 mm).~~

**~~2121.6.2.2~~** ~~Masonry veneer shall be not less than 33/4 inches (95 mm) thick and shall be bonded to the backing by means of substantial noncorroding metal wall ties spaced not farther apart than 16 inches (406 mm) vertically and 24 inches (610 mm) horizontally.~~

**2121.7 Partitions.** Reserved.

**~~2121.7.1~~** ~~The requirements specified herein shall apply to nonbearing interior separations, other than firewalls, of unit masonry construction.~~

**~~2121.7.2~~** ~~The lateral distance between vertical supports of nonbearing interior partitions of unit masonry shall not exceed 72 times the actual thickness of the partition, including plaster.~~

**~~2121.7.3~~** ~~The height of unit masonry partitions shall not exceed 36 times the actual thickness, including plaster.~~

**~~2121.7.4~~** ~~All interior unit masonry partitions shall be designed to meet the lateral live load requirements with corresponding perimeter anchorage supports, in accordance with Section 1618.8.~~

**2121.8 Fences.** Reserved.

**~~2121.8.1~~** ~~Masonry fences so located on a property that such fence, at the proposed height or by a future addition to height, could be used as a wall of a building shall be constructed with foundations and tie columns as provided for an exterior wall. Such fence shall be capped with a coping beam not less than 64 square inches (.4 m2) in cross-section reinforced with a minimum of two #4 rods, when not exceeding a height of 5 feet (1.5 m), or shall be capped by a tie beam as provided for exterior walls if exceeding a height of 5 feet (1.5 m).~~

**~~2121.8.2~~** ~~Masonry fences, so located on a property that by zoning regulation such fence could not be used as a wall of a building, shall be constructed as follows:~~

**~~2121.8.2.1~~** ~~Fences not exceeding 5 feet (1.5 m) in height shall be 8 inches (203 mm) thick and shall not be required to have tie columns, but shall be required to have a coping as provided herein; or such fences may be 4 inches (102 mm) thick with tie columns and coping not less than 8 inches (203 mm) thick.~~

**~~2121.8.2.2~~** ~~Fences exceeding 5 feet (1.5 m) in height shall be not less than 8 inches (203 mm) thick and shall have tie columns and tie beams as required for exterior walls.~~

**2121.9 Other masonry walls.** Reserved.~~Walls of masonry materials or arrangements of masonry units other than those specifically set forth in this chapter shall be in conformance with the general provisions of this code, may be classified by the subject to all or any of the requirements therefor to and any such additional requirements as the building official may prescribe.~~

**SECTION 2122**

**HIGH-VELOCITY HURRICANE ZONES-**

**REINFORCED UNIT MASONRY**

***Change Section 2122.1 to read as shown*:**

**2122.1 Standards.** The provisions of TMS 402/ACI 530/ASCE 5 and TMS 602/ACI 530.1/ASCE 6 are hereby adopted as a minimum for the design and construction of reinforced unit masonry. In addition to TMS 402/ ACI 530/ ASCE 5 and TMS 602/ACI 530.1/ASCE 6, reinforced unit masonry structures shall comply with Sections 2122.2.

**Exception:** Unless otherwise specified by the designing architect or engineer, where plan review and inspections are performed by a local building department in accordance with Sections 107 and 110, the provisions of TMS 402/ ACI 530/ASCE 5/TMS 402, Chapter 1, Section 1.19~~18~~ and TMS 602/ ACI 530.1/ASCE 6/ Sections 1.5 and 1.6 shall not apply.

**2122.2 General.**

**2122.2.1**~~Tie columns and tie beams as set forth in~~ Section 2121 shall ~~be~~ not ~~required~~ apply where design and construction are in accordance with the provisions of this section.

**2122.2.2** The design of buildings and structures of reinforced unit masonry shall be by a professional engineer or registered architect.

**2122.2.3** Minimum No. 9 gauge ladder type horizontal joint reinforcing at every alternate course (16-inch (406 mm) spacing), for reinforced masonry shall be provided. This reinforcement shall be tied to structural columns with approved methods. In addition, horizontal joint reinforcement shall comply with TMS 602/ACI530.1/ASCE 6 Sections 2.4C thru 2.4F and Section 3.4B.10~~7~~.

**2122.2.4 Special inspector**. A Florida-registered architect or professional engineer shall furnish inspection of all reinforced unit masonry structures.

**2122.3 Concrete masonry strength.** Concrete masonry strength shall be determined by unit strength method from TMS 602/ACI 530.1/ ASCE 6 Section 1.4 or in accordance with ASTM C 1314.

**2122.4 Reinforcement.** Reinforcement shall comply with TMS 402/ACI 530/ ASCE 5 and TMS 602/ ACI 530.1/ ASCE 6 except as modified ~~here~~in Sections 2107 and 2108.

**~~2122.4.1~~** ~~Development of bars in tension and compression shall be in accordance with TMS 402/ASCE 530/ ASCE5 Section 2.1.9.3 with the following changes to the factor y of Equation 2-12~~

~~γ = 1.0 for No. 3 (M#10) through No. 5 (M#16) bars;~~

~~γ = 1.04 for No. 6 (M#19) through No. 7 (M#22) bars; and~~

~~γ = 1.2 for No. 8 (M#25) through No. 11 (M#36) bars~~

~~Where epoxy coated bars are used, lap length shall be increased by 50 percent.~~

**~~2122.4.2~~** ~~Splices of reinforcement shall be in accordance with TMS 402/ ACI 530/ ASCE 5. Lap splices, welded splices, or mechanical splices are permitted in accordance with the provisions of TMS 402/ ACI 530/ ASCE 5 Section 2.1.9.7. Welding shall conform to AWS D1.4.~~

**~~2122.4.3~~** ~~Lap splices shall be in accordance with TMS 402/ ACI 530/ ASCE 5, Section 2.1.9.7.1.1 with the modifications of Section 2122.4.1 to the factor y of Equation 2-12. In no case shall the length of the lapped splice be less than 48 bar diameters, but not less than 12 inches.~~

**~~2122.4.4~~****~~Joint reinforcement~~**~~. Horizontal joint reinforcement shall be provided at every other course. Joint reinforcement shall be a minimum of No. 9 gauge and shall comply with TMS 602/ACI 530.1/ ASCE 6 Sections 2.4C through 2.4F. Joint reinforcement shall be placed in accordance with TMS 602/ACI 530.1/ ASCE 6 Section 3.4 B.7.~~

***Change Section 2122.5 to read as shown:***

**2122.5. Concentrated loads.** Concentrated loads shall be in accordance with TMS 402/ ACI 530/ ASCE 5 Sections 1.9.7~~.2~~ and 1.9.5 ~~2.1.8~~ ~~and shall not be assumed distributed across continuous vertical joints, including stack bond joints, unless reinforcing elements are designed and provided to distribute such loads~~.

**2122.6 Reinforced masonry bearing walls.** Reinforced masonry bearing walls shall have a nominal thickness of not less than 8 inches (203 mm).

**2122.7 Anchorage requirements.** Anchorage shall be in accordance with TMS 402/ ACI 530/ ASCE 5. Loading shall comply with TMS 402/ ACI 530/ ASCE 5 Section 1.7 and the following.

**2122.7.1** Reinforced masonry walls shall be securely anchored to adjacent structural members such as roofs, floors, columns, pilasters, buttresses and intersection walls.

**2122.7.2** Masonry walls shall be anchored to all floors and roofs that provide lateral support to such walls.

**2122.7.3** Such anchorage shall provide a positive direct connection capable of resisting the horizontal forces as required in Chapter 16 (High-Velocity Hurricane Zones), or a minimum force of 200 pounds per lineal foot (2919 N/m) of wall, whichever is greater.

**2122.7.4** Required anchors shall be embedded in reinforced grouted cells. Anchor bolts shall be installed in accordance with TMS 602/ ACI 530.1/ ASCE 6 Section 3.4 D.

**2122.7.5** Wood framing connected by nails shall not be considered as acceptable anchorage.

**2122.8 Mortar and grout.**

**2122.8.1** Mortar materials shall comply with TMS 602/ ACI 530.1/ ASCE 6 Section 2.1. Grout materials shall comply with TMS 602/ ACI 530.1/ ASCE 6 Section 2.2.

***Change Section 2122.8.2 to read as shown:***

**2122.8.2** Vertical alignment of vertical cells to be grouted shall be sufficient ~~provided~~ vertical alignment sufficient to maintain clear, unobstructed, continuous, vertical cores measuring not less than 2 ½ inches by 3 inches (51 mm by 76 mm) for fine aggregate grout and 3 inches by 3 inches for coarse aggregate grout as defined by ASTM C 476. The architect or engineer may specify other grout space sizes which shall be permitted provided they comply with TMS 402/ ACI 530/ ASCE 5 Section 1.20~~19~~ and TMS 602/ ACI 530.1/ ASCE 6 Section 3.5C

**2122.8.3** Placing of mortar and masonry units shall comply with TMS 602/ ACI 530.1/ ASCE 6 Section 3.3.

**2122.8.4 Grout placement.** Grout placement shall be in accordance with TMS 402/ ACI 530/ ASCE 5 and TMS 602/ ACI 530.1/ ASCE 6.

**2122.8.5** **Confinement.** Confine grout to the areas indicated on the Project Drawings. Use material to confine grout that permits bond between masonry units and mortar.

**2122.8.6** Unless otherwise required, mix grout other than self-consolidating grout to a consistency that has a slump between 8 and 11 in. (203 and 279 mm). Self-consolidating grout shall comply with TMS 602/ ACI 530.1/ ASCE 6.

**2122.8.7** Grout shall be placed before any initial set has occurred, but in no case more than 1-1/2 hours after the mix-designed water has been added.

***Change Section 2122.8.8 to read as shown:***

**2122.8.8** Grout placement shall comply with Section 3.5 of TMS 602/ACI 530.1/ASCE 6. Grouting shall be a continuous operation with grout pour height in accordance with Section 3.5C of TMS 602/ACI 530.1/ASCE 6 and with grout lift height in accordance  ~~lifts not exceeding 4 5 feet (1.5 m) and a maximum pour of 12 feet 8 inches (3.8 m). Grout placement shall comply~~ with Section 3.5D of TMS 602/ ACI 530.1/ ASCE 6.

**2122.8.9** Grouting shall be consolidated between lifts by puddling, rodding or mechanical vibration.

**2122.8.10** Grout keys shall be formed between grout pours. Grout keys shall be formed between grout lifts when the first lift is permitted to set prior to placement of the subsequent lift.

1. Form a grout key by terminating the grout a minimum of 1½ in. (38.1 mm) below a mortar joint.

2. Do not form grout keys within beams.

3. At beams or lintels laid with closed bottom units, terminate the grout pour at the bottom of the beam or lintel without forming a grout key.

**2122.9 Bearing.** Precast floor and roof units supported on masonry walls shall provide minimum bearing of 3 inches (76 mm) and anchorage in accordance with Section 2122.7.

**2122.10** Intersecting walls. Intersecting walls shall comply with TMS 402/ ACI 530/ ASCE 5 Section 1.9.4.

**Chapter 22 - Steel**

***Section 2201 General. Change Section 2201.1 to read as shown:***

**2201.1 Scope.**  The provisions of this chapter govern the quality, design, fabrication and erection of steel used structurally in buildings or structures.

**Exception**: Buildings and structures located within the high-velocity hurricane zone shall comply with the provision of Sections 2204 through 2208 and 2214 through 2224.

***Section 2204 Connections. Change Section 2204.1 to read as shown:***

**2204.1 Welding.** The details of design, workmanship and technique for welding, inspection of welding and qualification of welding operators shall conform to the requirements of the specifications listed in Sections 2205, 2206, 2207, 2208, 2210 (see Section 2222 for HVHZ) and 2211(see Section 2222 for HVHZ). ~~Special inspection of welding shall be provided where required by Section 1705.~~

***Section 2204 Connections. Change Section 2204.2 to read as shown:***

**2204.2 Bolting.** The design, installation and inspection of bolts shall be in accordance with the requirements of the specifications listed in Sections 2205, 2206, 2207, 2210 and 2211. *~~Special inspection~~* ~~of the installation of high-strength bolts shall be provided where required by Section 1705.~~

***Section 2210 – Cold-Formed Steel. Add Section 2210.1.1.3 to read as shown:***

**2210.1.1.3 Composite slabs on steel decks.** Composite slabs of concrete and steel deck shall be permitted to be designed and constructed in accordance with SDI-C, Standard for Composite Steel Floor Deck-Slabs

***Section 2211 – Cold-Formed Steel Light-Frame Construction. Change Sections 2211.3.3 and 2211.3.4 to read as shown:***

**2211.3.3 Trussses spanning 60 feet or greater.** The owner shall contract with a *registered design professional* for the design of the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing for trusses with clear spans 60 feet (18 288 mm) or greater. *~~Special inspection~~* ~~of trusses over 60 feet (18 288 mm) in length shall conform to Section 1705.~~

**2211.3.4 Truss quality assurance.** Reserved. ~~Trusses not part of a manufacturing process that provides requirements for quality control done under the supervision of a third-party quality control agency, shall be manufactured in compliance with Sections 1704.2.5 and 1705.2, as applicable~~.

***Section 2212 – Gable End Walls. Add Section 2212 to read as shown:***

**SECTION 2212**

**GABLE END WALLS**

**2212.1 Gable endwalls.** Gable endwalls shall be structurally continuous between points of lateral support.

**2212.1.~~2~~ 1 Cathedral endwalls.** Gable endwalls adjacent to cathedral ceilings shall be structurally continuous from the uppermost floor to the ceiling diaphragm or to the roof diaphragm.

**SECTION 2213**

**Reserved**

***Section 2214 High-Velocity Hurricane Zones – General—Steel Construction. Modify section 2214 to read as shown:***

**SECTION 2214**

**HIGH-VELOCITY HURRICANE ZONES—**

**GENERAL—STEEL CONSTRUCTION**

**2214.1 Design.** Steel and iron members shall be designed by methods admitting of rational analysis according to established principles or methods.

**2214.2** The design, fabrication and erection of iron and steel for buildings and other structures shall be as set forth in this Chapter. The requirements set forth in Sections 2215 through 2221 herein, inclusive, apply to structural steel for buildings and other structures. Sections 2222 and 2223, apply to cold-formed members of sheet or strip steel and light-gauge steel construction.

**2214.3** The following standards, as set forth in Chapter 35 of this code, are hereby adopted.

1. American Institute of Steel Construction, AISC:

a.Reserved.  ~~Manual of Steel Construction, 2005, Thirteenth Edition, AISC, Specification for Structural Steel Buildings.360-05.~~

b. Serviceability Design Considerations for Low-Rise Buildings, AISC.

c. Engineering for Steel Construction, AISC.

d. Detailing for Steel Construction, AISC.

e. Iron and Steel Beams - 1873 to 1952, AISC.

f. Torsional Analysis of Steel Members, AISC

2. American Iron and Steel Institute, AISI:

a. Reserved. ~~Specification for the Design of Cold-Formed Steel Structural Members, AISI.~~

b.Reserved. ~~Fire-Resistant Steel-Frame Construction, AISI.~~

c.Reserved. ~~Fire-Safe Structural Steel & #150; A Design Guide, AISI.~~

d.Reserved. ~~Designing Fire Protection for Steel Trusses, AISI.~~

e. Cold-Formed Steel Design Manual, AISI

f. Specifications for the Design of Light-Gage Cold-Formed Stainless Structural Members, AISI.

g. Specification for the Criteria for Structural Application of Steel Cables for Buildings, AISI.

h.Reserved. ~~Designing Fire Protection for Steel Columns, AISI.~~

i. Design Manual for Structural Tubing, AISI.

3. American National Standards Institute/American Society of Civil Engineers, ANSI/ASCE.

a. Reserved. ~~Specifications for the Design and Construction of Composite Slabs and Commentary on Specifications for the Design and Construction of Composite Slabs, ANSI/ASCE 3.~~

b. Specifications for the Design of Cold-Formed Stainless Steel Structural Members, ANSI/ASCE 8.

c. Reserved. ~~Guideline for Structural Condition Assessment of Existing Buildings, ANSI/ASCE 11.~~

4. American National Standards Institute/American Welding Society, ANSI/AWS.

a. Standard Welding Procedure and Performance Qualification, AWS B2.1.

b. Recommended Practice for Stud Welding, AWS C5.4.

c. Structural Welding Code - Steel , ANSI/AWS D1.1.

d. Structural Welding Code - Sheet Metal , AWS D1.3.

e. Structural Welding Code – Reinforcing Steel, ANSI/AWS D1.4

f. Specification for Welding of Sheet Metal , AWS D9.1.

g. Standard for Qualification of Welding Procedures and Welders for Piping and Tubing, AWS D10.9.

5. American Society for Testing and materials, ASTM.

a. Standard Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use, ASTM A 6.

b. Standard Specifications for High-Strength Bolts for Structural Steel Joints, ASTM A 325.

c. Standard Specification for Heat-Treated Steel Structural Bolts. 150 KSI Minimum Tensile Strength, ASTM A 490.

d. Standard Specification for General Requirements for Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process, ASTM A 525.

6. National Association of Architectural Metal Manufacturers, NAAMM.

a. Metal Grating Manual, NAAMM.

7.Reserved. ~~Rack Manufacturers Institute/American National Standards Institute, RMI/ANSI.~~

~~a. Industrial Steel Storage Racks Manual, RMI.~~

~~b. Manual of Safety Practices - A code of Practices for the Use of Industrial and Commercial Steel Storage Racks, RMI/ANSI MH16.2.~~

8. Research Council on Structural Connections of the Engineering Foundation, RCSCEF.

a. Specification for Structural Joints Using ASTM A 325 or A 490 Bolts, RCSCEF.

9.Reserved. ~~Shelving Manufacturers Association, a Products Section of the Material Handling Institute/American National Standards Institute, SMA/ANSI.~~

~~a. Specification for the Design, Testing, Utilization and Application of Industrial Grade Steel Shelving , SMA/ANSI MH281.~~

10. Steel Deck Institute, Inc., SDI.

a. Reserved .~~Standard Practice Details , SDI.~~

b. Reserved. ~~SDI Manual of Construction with Steel Deck, SDI.~~

c. Reserved. ~~Deck Damage and Penetrations, SDI.~~

d. Reserved. ~~Steel Deck Institute Design Manual.~~

e. Reserved. ~~LRFD Design Manual for Composite Beams and Girders with Steel Deck, SDI.~~

f. Diaphragm Design Manual, SDI.

g.    SDI-C-2011 Standard for Composite Steel Floor Deck Slabs

11. Steel Joist Institute, SJI.

a. Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders, SJI.

b. Structural Design of Steel Joist Roofs to Resist Ponding Loads, Technical Digest No. 3, SJI.

c. Vibration of Steel Joist-Concrete Slab Floors, Technical Digest No. 5 , SJI.

d. Structural Design of Steel Joist Roofs to Resist Uplift Loads, Technical Digest No. 6, SJI.

e. Welding of Open Web Steel, Technical Digest No. 8 , SJI.

f. Handling and Erection of Steel Joists and Joist Girders, Technical Digest No. 9, SJI.

g. 60-Year Steel Joist Manual, SJI.

12.Reserved. ~~Steel Structures Painting Council, SSPC.~~

a. Reserved. ~~Steel Joist Shop Paint, SSPC - Paint 15.~~

b. Reserved. ~~A Guide to the Shop Painting of Structural Steel, SSPC/AISC.~~

13.Reserved. ~~Underwriters Laboratories, Inc., UL.~~

~~a. Test for Uplift Resistance of Roof Assemblies, UL 580.~~

14. Welded Steel Tube Institute, Inc., WSTI.

a. Manual of Cold Formed Welded Structural Steel Tube.

**2214.4 Workmanship.** Reserved.~~Steel construction shall be in conformance with the tolerances, quality and methods of construction as set forth in Section 2214.3.~~

**2214.5 Statements of the structural responsibilities of architects and professional engineers on the design of structural steel systems.** Reserved.

**~~2214.5.1~~** ~~The structural engineer of record and/or the architect of record shall be responsible for all aspects of the structural design including the design of components and~~  ~~connections. The structural construction documents may assign to the fabricator the~~  ~~responsibility for implementing the design as specified and for maintaining fabrication~~  ~~and erection tolerances and for ensuring the fit and erectability of the structure.~~

**~~2214.5.2~~** ~~The structural engineer of record and/or the architect of record may elect to~~  ~~detail all connections on the structural construction documents and require fabrication in accordance with those details.~~

**~~2214.5.3~~** ~~Alternately the structural engineer of record and/or the architect of record may permit the fabricator to select or modify connections subject to review and approval by the structural engineer of record and/or the architect of record. In that case, the structural construction documents shall specify criteria for the design of connections and shall identify the nature, magnitude and location of all design loads.~~

**~~2214.5.4~~** ~~The structural engineer of record and/or the architect of record shall require the submission of fabrication and erection drawings for review as an indication that his or her intent has been understood and the specified criteria have been used.~~

**~~2214.5.5~~** ~~Structural submittals requiring engineering input, such as dealing with substitute connections, shall be accompanied by design calculations and shall bear the impressed seal, signature and date of the specialty engineer who prepared them.~~

***Section 2215 High-Velocity Hurricane Zones – Material. Modify section 2215 to read as shown:***

**SECTION 2215**

**HIGH-VELOCITY HURRICANE ZONES—**

**MATERIAL**

**2215.1 Steel.** Reserved.~~Steel shall conform to the physical requirements set forth in the applicable standard in Section 2214.3.~~

**2215.2 High-strength steel bolts.** Reserved. ~~High-strength steel bolts shall conform to the requirements set forth in the applicable standards of Section 2214.3.~~

**2215.3 Used and damaged material.** All steel shall be straight and true, and any section damaged to be out of shape shall not be used. Steel previously used or fabricated for use or fabricated in error shall not be used except with the approval of the building official. Filled holes or welds shall not be concealed. Straightened or retempered fire-burned steel shall not be used except with the approval of the building official.

**2215.4 Tests.** Reserved.~~The building official may require tests and/or mill records to determine the quality of materials.~~

**2215.5 Ribbed bolts**. Ribbed bolts shall be made from carbon manganese steel with a minimum tensile strength of 70,000 per square inch (482.7 MPa).

***Section 2216 High-Velocity Hurricane Zones –Design Loads. Modify section 2216 to read as shown:***

**SECTION 2216**

**HIGH-VELOCITY HURRICANE ZONES—**

**DESIGN LOADS**

**2216.1** Design shall be based on the dead, live, wind and other loads set forth in Chapter 16 (High-Velocity Hurricane Zones) and the additional stress considerations set forth in this Chapter.

***Section 2217 High-Velocity Hurricane Zones – Minimum Thickness Of Material. Modify section 2217 to read as shown:***

**SECTION 2217**

**HIGH-VELOCITY HURRICANE ZONES—**

**MINIMUM THICKNESS OF MATERIAL**

**2217.1** The minimum thickness of material shall not be less than as set forth in the applicable standards listed in Section 2214.3 except as otherwise set forth herein.

***Section 2218 High-Velocity Hurricane Zones – Connections. Modify section 2218 to read as shown:***

**SECTION 2218**

**HIGH-VELOCITY HURRICANE ZONES—**

**CONNECTIONS**

**RESERVED**

**~~2218.1~~** ~~Connections shall conform to the requirements of the applicable standards set forth in Section 2214.3.~~

**~~2218.2~~** ~~A Florida-registered architect or professional engineer shall inspect the welding and high-strength bolting of structural steel framing and welding, bolting and fastening of lightweight material systems and metal sidings of buildings with areas exceeding 1,000 square feet (93 m2).~~

**~~2218.3~~** ~~Welding in the shop or field shall be performed by welders who have been qualified under the applicable AWS code.~~

***Section 2219 High-Velocity Hurricane Zones – Tubular Columns. Modify section 2219 to read as shown:***

**SECTION 2219**

**HIGH-VELOCITY HURRICANE ZONES—**

**TUBULAR COLUMNS**

**2219.1** Tubular columns and other primary compression members, excluding secondary posts and struts not subject to bending and whose design load does not exceed 2,000 pounds (8900 N), shall have a minimum least dimension of 21/2 inches (64 mm) and a minimum wall thickness of 3/16 inch (4.8 mm).

**2219.2** Tubular members when filled with concrete shall have 1/4-inch diameter (6.4 mm) pressure relief holes drilled through the shell, within 6 inches (152 mm) of the top and bottom of the exposed length of the member and one hole at midheight.

**2219.3** Concrete fill in tubular members shall not be assumed to carry any of the load except in compression members having a least dimension of 8 inches (203 mm) or greater and having a 1 inch (25 mm) inspection hole in the plate at each end.

***Section 2220 High-Velocity Hurricane Zones – Protection Of Metal. Modify section 2220 to read as shown:***

**SECTION 2220**

**HIGH-VELOCITY HURRICANE ZONES—**

**PROTECTION OF METAL**

**RESERVED**

**~~2220.1~~** ~~All field rivets, bolts, welds and abrasions to the shop coat shall be spot painted or treated with the material used for the shop coat, or an equivalent comparable to the shop coat, after removal of all objectionable deleterious materials.~~

**~~2220.2~~** ~~Primary structural steel members, except where intended to be encased in concrete, shall have one shop coat of paint and, if exposed to the atmosphere or elements in the completed building or structure shall receive a second shop coat of paint or be field painted in addition to the initial shop coat with lead, graphite or asphalt paint or other approved coating compatible with the shop coat, except as herein provided. Surfaces of members in contact with, but not encased in, concrete or masonry shall be asphalt coated or otherwise effectively coated where the thickness of the metal is 3/16 inch (4.8 mm) or less.~~

**~~2220.3~~** ~~Members having a corrosion-resistive metallic coating of zinc of not less than G90 Coating Designation (1.25 ounces; 35 grams) or other equivalent approved coating are not required to have the shop and field coating.~~

**~~2220.4~~** ~~Where structural members are exposed to industrial fumes, fresh and/or salt water, salt water spray, and other corrosive agents, such members shall be effectively protected with a corrosion-resistive metallic or other equivalent approved coating.~~

**~~2220.5~~** ~~Corrosion-resistant steels with or without painting or coating may be approved where sufficient test or other factual data establishing the satisfactory performance under the particular exposure conditions or usage is submitted to and approved by the building official.~~

***Section 2221 High-Velocity Hurricane Zones – General—Open Web Steel Joists. Modify section 2221 to read as shown:***

**SECTION 2221**

**HIGH-VELOCITY HURRICANE ZONES—**

**GENERAL—OPEN WEB STEEL JOISTS**

**2221.1 Standards.** Open web steel joists shall comply with the standards set forth in Section 2214.3.

**2221.2** Reserved.~~Statements of responsibilities of architects and professional engineers on the design of structural systems using open web steel joists.~~

**~~2221.2.1~~** ~~The structural construction documents shall designate the standards for joist~~  ~~design and shall indicate layout, end supports, anchorage, bridging requirements, etc.,~~  ~~including connections to walls. The structural construction documents shall indicate~~  ~~special requirements for concentrated loads, openings, extended ends and resistance to~~  ~~uplift.~~

**~~2221.2.2~~** ~~The structural engineer of record and/or the architect of record shall require~~  ~~structural submittals for the structural engineer of record's review and/or the architect of~~  ~~record's review as an indication that his or her intent has been understood and that the~~  ~~specified criteria have been used. The structural submittals, unless catalog submittals,~~  ~~shall bear the impressed seal, signature and date of the specialty engineer who prepared~~  ~~them.~~

**~~2221.2.3~~** ~~The structural submittals shall identify the specific project, shall list the design~~  ~~criteria and shall show all joist location information and details necessary for proper~~  ~~installation.~~

**2221.3 Design.** Reserved.

**~~2221.3.1~~** ~~Open web steel joist systems shall be designed to accommodate the loads and forces set forth in Chapter 16 (High-Velocity Hurricane Zones).~~

**~~2221.3.2~~** ~~Net uplift forces for all zones, applied to the joist systems, shall be clearly indicated on the structural construction documents.~~

**~~2221.3.3~~** ~~Where the net uplift force is equal to or greater than the gravity load of construction, all web and bottom chord members shall comply with slenderness ratio~~  ~~requirements for top chord and for compression members other than top chord as provided for in the standards set forth in Section 2214.3(11).~~

**~~2221.3.4~~** ~~The slenderness ratio about the horizontal axis can be used in determining the capacity of the top chord provided the top chord is stayed laterally by the deck system. The top chord for superimposed dead and live loads shall be considered to be stayed laterally if:~~

~~1. A poured-in-place concrete slab is in direct contact with the top chord.~~

~~2. A light gauge steel deck complying with Section 2222 is fastened to the top chord.~~

~~3. Any other approved deck system such that attachments of the top chord to the~~  ~~deck are capable of resisting a lateral force specified in the standard set forth in~~  ~~Section 2214.3 and the spacing of the fasteners does not exceed 24 inches (610~~  ~~mm) along the chord.~~

**~~2221.3.5~~** ~~When the bottom chord under net uplift loads is in compression, the bottom~~  ~~chord shall be stayed laterally by a bracing system adequately anchored at each end.~~

**~~2221.3.6~~** ~~Fastenings shall be bolting, welding or other approved fastening device that provides a resistance to lateral movement as required by rational analysis or by test, but~~  ~~not less than 400 pounds per foot (5838 N/m).~~

**2221.4 Connections.** Reserved.~~The joints and connections of members of steel joists shall be made by welding or bolting.~~

**2221.5 Bridging**. Reserved.

**~~2221.5.1~~** ~~All bridging and anchors shall be completely installed before application of any construction loads. Bridging shall secure the chords against lateral movement and shall position and hold the joists vertical and in a straight line.~~

**~~2221.5.2~~** ~~Bridging members shall be of material having a thickness not less than:~~

~~1. 1/8 inch (3.2 mm) for hot-rolled sections.~~

~~2. 16 gauge for cold-formed sections.~~

~~3. 1/2 inch (12.7 mm) diameter for round members.~~

**~~2221.5.3~~** ~~Bridging shall be connected to the chords of the joists by welding, bolting or~~  ~~other positive mechanical means. Each attachment shall be capable of resisting a horizontal force specified in the standard set forth in Section 2214.3.~~

**~~2221.5.4~~** ~~Bridging shall be connected to the chords of the joists by bolting or welding at all points of contact and shall be capable of transmitting the forces required of the~~  ~~bridging members. The ends of all bridging lines shall terminate at walls or beams and~~  ~~shall be anchored thereto and where anchorage is not possible, stability shall be provided by additional bracing.~~

**~~2221.5.5~~** ~~Where uplift forces are a design requirement, a single line of continuous bottom chord bridging shall be provided near the first panel points.~~

**2221.6 End supports and anchorage.**

**2221.6.1** Joists shall not bear directly on unit masonry unless masonry is designed as engineered unit masonry with properly reinforced, grout-filled continuous bond beam.

**2221.6.2** The ends of every joist shall be bolted, welded or encased in concrete at each point of bearing to provide not less resistance in any direction than 50 percent of the Steel Joist Institute (SJI) rated end reaction horizontally and 100 percent of the net uplift reaction specified in the structural construction documents.

**2221.6.3** The ends of joists shall have a minimum bearing, on reinforced concrete and steel supports as specified in the standard set forth in Section 2214.3(11).

**2221.7 Fabrication.** Reserved.~~Steel joists shall be manufactured by plants having a certificate of competency issued by the authority having jurisdiction.~~

**2221.8 Shop standards.** Reserved.~~The applicant for building permit will not be required to submit shop drawings for steel joists except as set forth in Sections 2221.8.1 and 2221.8.2.~~

**~~2221.8.1~~** ~~The master permit drawings required by this code shall describe all steel to be used in the proposed building or structure, including open-web frames and trusses, and shall detail member sizes, spacing, attachment and welding including provision for~~  ~~unusual loading such as concentrated loads, unusual cantilevering, soffit framing and~~  ~~continuity except that such prime drawings may designate standard open-web steel joists by Steel Joist Institute (SJI) number and symbol.~~

**~~2221.8.2~~** ~~Where standard open-web steel joists are designated on the prime drawings by customary SJI numbers or symbols, the manufacturer, fabricator or supplier may be required to submit design computations, stress diagrams, sizes of members and sizes of welds to the building official for approval before installation to demonstrate that the units to be provided do, in fact, comply with the specifications and performance standards set forth by SJI. Only design computations prepared by a professional engineer will be accepted. Resubmission of any fabricator designs so submitted and approved will not be required for each subsequent job. Proof of the characteristics of the material may be~~  ~~required for any steel for which a minimum yield strength in excess of 36,000 per square inch (248.2 MPa) is used as the basis of design.~~

***Section 2222 High-Velocity Hurricane Zones – Cold-Formed Steel Construction***

***Modify section 2222 to read as shown:***

**SECTION 2222**

**HIGH-VELOCITY HURRICANE ZONES—**

**COLD-FORMED STEEL CONSTRUCTION**

**2222.1** Cold-formed steel construction shall include individual structural members, structural decks or wall panels, and nonstructural roofing, siding and other construction elements formed from sheet or strip steel and as set forth in Section 2214.3(2).

**2222.2 Standards.** Cold-formed steel used in structural applications shall conform to the Standards set forth in Section 2214.3(2).

**2222.2.1** Galvanizing as referred to herein is to be zinc coating conforming to the standard set forth in Section 2214.3(5)(d).

**2222.3 Individual structural members.** Design, fabrication and erection of individual cold-formed steel structural members shall be as set forth herein.

**2222.3.1** All structural members shall be positively connected to resist the loads set forth in Chapter 16 (High-Velocity Hurricane Zones).

**2222.3.2** All connections shall be by welding, riveting, bolting or other approved fastening devices or methods providing positive attachment and resistance to loosening. Fasteners shall be of compatible material.

**2222.3.3** Cables and rods shall not be used as lateral bracing in habitable structures. Lateral bracing, when used, shall have a slenderness ratio of 300 or less, unless restricted by any other section of this code.

**2222.3.4** All doors shall be anchored as part of the frame in the closed position.

**2222.3.5** No increase in strength shall be allowed for the effect of cold work.

**2222.4 Structural sheets.** Decks and panels with or without an approved fill material may be designed as diaphragms in accordance with Diaphragm Design Manual of the Steel Deck Institute, provided other limitations in this code are complied with.

**2222.4.1** Poured fill on roof and floor decks shall not be assumed to have any structural value to support or resist vertical or lateral loads or to provide stability or diaphragm action unless so designed, and poured fill and/or applied materials do not degrade when subjected to moisture.

**2222.4.2** Positive attachment of sheets shall be provided to resist uplift forces. Attachment shall be as set forth in Section 2222.3.1 and as required by rational analysis, and/or tests, but not less frequently than the following maximum spacing:

1. One fastener shall be placed near the corner of each sheet or at overlapping corners of sheets.

2. Along each supporting member, the spacing of fasteners shall not exceed 8 inches (203 mm) on centers at ends of sheets or 12 inches (305 mm) on centers.

3. The spacing of edge fasteners between panels, and between panels and supporting members, parallel to the direction of span, where continuous interlock is not otherwise provided shall be not more than 12 inches (305 mm) on centers.

4. Fastening shall be by bolting, welding or other approved fastening device that provides a resistance to lateral movement as required by rational analysis or by test, but not less than 400 pounds per lineal foot (5838 N/m).

5. Poured lightweight concrete fill will be acceptable as continuous interlock.

6. Attachment to the supporting structure shall be provided at all perimeters and discontinuities by fasteners spaced at no more than 8 inches (203 mm) on center.

7. Wall panels shall be attached as set forth in Section 2222.4.2(1),(2) and (3).

**2222.4.3** Metal siding and roof panels shall be not less than 24 gauge.

**Exception:** Roof panels having an approved fill material designed to act as adiaphragm may use a lighter deck gauge provided that the product approval for the fill material allows its use over the same deck gauge, but in no case shall the deck be less than 26 gauge. The permit applicant shall provide the building official with signed and sealed structural calculations for the diaphragm design prepared by a licensed architect or engineer proficient in structural design. The diaphragm design shall comply with the applicable requirements of Chapter 16 and Chapter 22 (High-Velocity Hurricane Zones).

**2222.4.4** Deflection of metal siding and roof panels shall not exceed L/240.

**2222.4.5** The bending stress of metal siding and roof panels shall be designed using a safety factor of not less than 2.5.

**2222.4.6** Minimum roof decking uplift loads shall comply with the design requirements of Chapter 16 (High-Velocity Hurricane Zones) utilizing rational analysis, but not less than UL 580 Class 90.

**2222.4.7** Reserved.

**2222.4.8** Metal siding and roof panels shall be designed, where possible, to be continuous over two or more spans.

**2222.5 Nonstructural sheets.** Steel sheet sections not suitable by rational analysis for self-supporting structural sheets shall be termed roofing and siding. Roofing and siding shall be used only over solid wood sheathing or equivalent backing.

**2222.5.1** Attachment of sheets shall be as set forth in Section 2222.4.2

**2222.6 Protection of metal.** All members shall be treated with protective paint coatings or equivalent protection except as permitted in Sections 2222.6.1 or 2222.6.2.

**2222.6.1** All steel sheets having a thickness of less than 20 gauge, i.e., materials of higher gauge, shall be galvanized in accordance with the standards of Section 2214.3(5)(d) herein to provide a minimum coating designation of G90.  
**2222.6.2** Abrasions or damages to the protective coating shall be spot-treated with a material and in a manner compatible to the shop protective coating.

**2222.7** Welding shall conform to the requirements of Sections 2214.3~~, 2218.2 and 2218.3~~.

***Section 2223 High-Velocity Hurricane Zones – Pre-Engineered, Prefabricated Metal Building Systems And Components (Pre-Engineered Structures)***

***Modify section 2223 to read as shown:***

**SECTION 2223**

**HIGH-VELOCITY HURRICANE ZONES—**

**PRE-ENGINEERED, PREFABRICATED METAL BUILDING SYSTEMS**

**AND COMPONENTS (PRE-ENGINEERED STRUCTURES)**

**2223.1 Scope.** Metal buildings (preengineered structures) shall include, but not be limited to, tapered or straight web structural steel frames and predominantly cold formed steel secondary components, including, but not limited to, girts, purlins, roof sheets, wall sheets, etc.

**2223.2 Standards.** Frames and components shall comply with the standards set forth in Section 2214.3.

**2223.3** Structural construction documents for pre-engineered structures shall indicate the necessary measures for adapting the structures to the specific site. The structural construction documents shall indicate all openings, concentrated loads and other special requirements. Foundation conditions assumed in the design shall be indicated as well as the location and magnitude of building reactions on that foundation under all design conditions.

**2223.4 Structural submittals.** Reserved.

**~~2223.4.1~~** ~~The structural engineer of record and/or the architect of record shall require structural submittals for review as an indication that his or her intent has been understood and that the specified criteria have been used. The structural submittals shall bear the impressed seal, signature and date of the specialty engineer who prepared them.~~

**~~2223.4.2~~** ~~The structural submittals shall identify the project and list loading and other~~  ~~design criteria. The fabrication and erection drawings shall indicate in detail the construction of the standard structure used or as modified to comply with the requirements of the particular project. The fabrication and erection drawings shall indicate all connection details, openings and other special details. The fabrication and erection drawings shall show the magnitude and location of building reactions on the foundation under all design conditions. Calculations supporting the design shall be submitted not only for the standard structure, but also for modifications and for related components requiring structural design.~~

**2223.5 Design.** A building or component system in this section shall have a structural engineer of record and/or architect of record responsible for the overall design and performance of the entire building including the foundation and the anchorage of the preengineered metal systems buildings thereto. The structural engineer of record and/or the architect of record shall provide the structural construction documents necessary for permitting.

**2223.5.1** Calculations for drift and deflection of the metal system building shall be by the specialty engineer.

**2223.5.2** Calculations for deflection shall be done using only the bare frame method. Reductions based on engineering judgment using the assumed composite stiffness of the building envelope shall not be allowed. Drift shall follow AISC serviceability design considerations for low-rise buildings. The use of composite stiffness for deflection calculations shall be permitted only when actual calculations for the stiffness are included with the design for the specific project. When maximum deflections are specified by the structural construction documents, calculations shall be included in the design data.

**2223.5.3** The manufacturer shall design the metal system building and/or component system in accordance with the provisions of Chapter 16 (High-Velocity Hurricane Zones), and the design shall be signed, dated and sealed by the specialty engineer and reviewed by the structural engineer of record and/or the architect of record. The manufacturer of the metal system building and or component system shall be responsible to provide all reactions to the structural engineer of record and/or the architect of record.

**2223.5.4** Fastenings shall be by bolting, welding or other approved fastening device that provides a resistance to lateral movement as required by rational analysis or by test, but not less than 400 pounds per lineal foot (5838 N/m).

**2223.6 Permitting.** Reserved.

**~~2223.6.1~~** ~~The applicant for a building permit will be required to submit structural construction documents indicating the overall building dimensions, haunch and eave heights, roof slopes, bay spacing, column locations, approximate frame and component profiles, foundation details and fire rating details and the magnitude and location of~~  ~~building reactions on the foundation under all design conditions prior to the issuance of the permit.~~

**~~2223.6.2~~** ~~Prior to the commencement of erection of the structure, the structural submittal and calculations, including, but not limited to, fabrication and erection drawings signed, dated and sealed by the specialty engineer and reviewed by the architect of record and/or the structural engineer of record, shall be submitted and approved by the building department.~~

**~~2223.6.3~~** ~~Where the roofing and siding are structural sheets consisting of clip-mounted standing seam or other direct screw attached panel system and are in themselves the finished product, a separate roofing permit shall not be required.~~

**2223.7 Fabrication and erection.**

**2223.7.1** Reserved.~~Fabrication shall be done in accordance with the standards mentioned above. The manufacturer shall provide a letter certifying that the building has been designed and fabricated in accordance with the above referenced standards.~~

**2223.7.2** Temporary bracing shall be provided during erection and shall remain in place until all structural frames, purlins, girts, flange braces, cable or rod bracing and sheets used as diaphragms have been installed.

**2223.8 Roof sheets, wall sheets, roof panels and wall panels.**

**2223.8.1** Reserved.~~All building envelope components shall have Product Approval.~~

**2223.8.2** The fusion welding of structural members and structural sheets defined in Section 2222.4 and less than 22 gauge (0.0299 inch nominal) in thickness shall have minimum of 5/8 inch (17 mm) diameter welds through weld washers not less than 14-gauge in thickness and 1 inch (25 mm) in diameter, contoured if necessary to provide continuous contact, or an equivalent device.

**2223.8.3** Clip-mounted standing-seam roof sheets shall not be used as diaphragms nor shall they be considered as adequate lateral bracing of the flange of the secondary member to which they are attached unless one or both of these features are designed into the sheathing system and the manufacturer can certify by testing and/or analysis that such capabilities exist and are appropriately defined.

**2223.8.4** Structural standing-seam roof sheets shall be a minimum of 24 gauge [0.0239 inch (.6 mm) nominal] in thickness.

**2223.8.5** Direct screw attached roof and wall sheets may be used as diaphragms provided the sheets are a minimum of 24 gauge [0.0239 inch (.6 mm) nominal] in thickness. Additionally, these sheets shall be considered to laterally brace the flange of the secondary member to which they are attached.

**2223.8.6** See Section 2222 for additional requirements for roof sheets, wall sheets, roof panels and wall panels.

**2223.9 Roof purlins and wall girts.**

**2223.9.1** Adequate bracing shall be provided to the compression flanges of secondary members with special attention to those members subject to uplift or outward pressures where no roof or wall sheets are attached to provide such bracing. Sag rods shall not be considered bracing when located in the neutral axis of the web of the secondary members.

**2223.9.2** Roof purlins and wall girts shall be laterally braced in addition to relying on deck and panel diaphragm action.

**2223.9.3** The ends and bearing points of secondary members shall be designed to carry 100 percent of dead, live and collateral loads superimposed on them by wind.

**2223.9.4** Upward or outward forces of wind are to be calculated without live and collateral loads. When downward or inward forces caused by wind are involved, the dead forces plus collateral load forces must be combined but the roof live load may be omitted.

**2223.10 Individual structural members.**

**2223.10.1** Cables and rods shall not be used as lateral bracing in habitable structures. Lateral bracing, when used, shall have a slenderness ratio of 300 or less, unless restricted by any other section of this code.

**2223.10.2** **Reserved.** ~~Doors and windows in metal building systems shall have Product Approval.~~

**2223.10.3** All doors shall be anchored as part of the frame in the closed position.

**2223.10.4** See Section 2222 for additional requirements for metal building systems and components.

**2223.11 Inspection.** Reserved.

**~~2223.11.1~~** ~~Metal system buildings shall be inspected by a Florida-registered architect or professional engineer.~~

**~~2223.11.2~~** ~~Metal building system manufacturers shall be accredited under an independent third-party inspection program that requires a minimum of two audits per year and is approved by the authority having jurisdiction.~~

**~~2223.11.3 Letter of certification.~~** ~~The metal systems building manufacturer shall submit a written certification prepared, signed, dated and sealed by the specialty engineer registered to practice in the State of Florida verifying that the building system design and metal wall and roof system design including, but not limited to, panels, clips, support system components, etc., meet the indicated loading requirements and codes of the authorities having jurisdiction. The certification shall reference specific dead loads, live loads, wind loads/speeds, tributary area load reductions (if applicable), collateral loads, end use categories, crane loads, accessory loads, load combinations, governing code bodies including year and load applications. The letter of certification shall be provided to the structural engineer of record and/or the architect of record, the special inspector and the building department prior to the issuance of the certificate of occupancy.~~

**~~2223.11.4~~** ~~Structural construction documents demonstrating compliance with this code shall be reviewed and approved by the special inspector prior to the issuance of a certificate of occupancy.~~

***Section 2224 High-Velocity Hurricane Zones – Chain Link Fences. Modify section 2224 to read as shown:***

**SECTION 2224**

**HIGH-VELOCITY HURRICANE ZONES—**

**CHAIN LINK FENCES**

**2224.1** Chain link fences in excess of 12 feet (3.7 m) in height shall be designed according to the loads specified in Chapter 16 (High-Velocity Hurricane Zones).

**2224.2** Chain link fences less than 12 feet (3.7 m) in height shall be designed according to the loads specified in Chapter 16 (High-Velocity Hurricane Zones) or may be constructed to meet the minimum requirements specified in Table 2224.

**TABLE 2224 CHAIN LINK FENCE MINIMUM REQUIREMENTS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Fence Height (ft)** | **Terminal Post Dimensions (in inches) (o.d. x wall thickness)** | **Line Post Dimensions (o.d. x wall thickness) (in inches)** | **Terminal Post Concrete Foundation Size (diameter x depth) (in inches)** | **Line Post Concrete Foundation Size (diameter x depth) (in inches)** |
| Up to 4   Over 4 to 5   Over 5 to 6   Over 6 to 8   Over 8 to 10   Over 10 to 12 | 2 3/8 x 0.042   2 3/8 x 0.042   2 3/8 x 0.042   2 3/8 x 0.110   2 7/8 x 0.110   2 7/8 x 0.160 | 1 5/8 x 0.047   1 7/8 x 0.055   1 7/8 x 0.065   2 3/8 x 0.095   2 3/8 x 0.130   2 7/8 x 0.120 | 10 x 24   10 x 24   10 x 24   10 x 36   12 x 40   12 x 42 | 8 x 24   8 x 24   8 x 24   10 x 36   10 x 40   12 x 42 |

For SI: 1 inch = 25.4 mm.

**NOTES:**

1. This table is applicable only to fences with unrestricted airflow.

2. Fabric: 121/2 gauge minimum.

3. Tension bands: Use one less than the height of the fence in feet evenly spaced.

4. Fabric ties: Must be minimum the same gauge of the fabric.

5. Fabric tie spacing on the top rail: Five ties between posts, evenly spaced.

6. Fabric tie spacing on line posts: One less than height of the fence in feet, evenly spaced.

7. Either top rail or top tension wire shall be used.

8. Braces must be used at terminal posts if top tension wire is used instead of top rail.

9. Post spacing: 10 foot (3 m) on center maximum.

10. Posts shall be embedded to within 6 inches (152 mm) from the bottom of the foundation.

11. In order to follow the contour of the land, the bottom of the fence may clear the contour of the ground by up to 5 inches (127 mm) without increasing table values to the next higher limit.

**Chapter 23 – Wood**

***Section 2301 General. Change Section 2301.1 to read as shown:***

**2301.1 Scope.**  The provisions of this chapter shall govern the materials, design, construction and quality of wood members and their fasteners.

**Exception:** Buildings and structures located within the high-velocity hurricane zone shall comply with the provisions of Sections 2302, 2303.1 through 2303.1.4, 2303.1.8, 2303.2, 2304.11, 2304.13 and Sections 2314 through 2330.

***Section 2304 – General Construction Requirements. Add Section 2304.3.4 to read as shown:***

**2304.3.4 Gable endwalls.**

**2304.3.4.1 General.** Gable endwalls shall be structurally continuous between points of lateral support.

**2304.3.4.2 Cathedral endwalls.** Gable endwalls adjacent to cathedral ceilings shall be structurally continuous from the uppermost floor to the ceiling diaphragm or to the roof diaphragm.

**2304.3.4.3 Full height studs**. Full height studs may be sized using the bracing at a ceiling diaphragm for determining stud length requirements.

***Section 2304.11.4 Wood in contact with the ground or fresh water. Add a section to read as shown:***

**2304.11.4.3 Decks, fences, patios, planters, or other wooden building components.** Decks, fences, patios, planters, or other wooden building components that directly abut the sidewall of the foundation or structure shall be constructed so as to provide:

1. Eighteen-inch (457 mm) clearance beneath or,

2. Six-inch (152 mm) clearance between the top of the component and the exterior wall covering or,

3. Have components that are easily removable by screws or hinges to allow access for inspection of the foundation sidewall and treatment for termites.

***Section 2304 – General Construction Requirements. Add Section 2304.11.10 to read as shown:***

**2304.11.10 Foam-plastic insulation.**

**2304.11.10.1** The provisions of Section 2603. 9 shall apply to the installation of foam plastic insulation in close proximity to the ground.

**Exception**: Materials which are of naturally durable wood or are pressure treated for ground contact, and which are installed with at least 6 inches (152 mm) clear space from the structure to allow for inspection and treatment for termites.

In order to reduce chances of termite infestation, no wood, vegetation, stumps, dead roots, cardboard, trash, or other cellulose-containing material shall be buried on the building lot within 15 feet (4.6 m) of any building or the position of any building proposed to be built.

***Section 2304 – General Construction Requirements. Add Section 2304.13 to read as shown:***

**2304.13 Preparation of building site and removal of debris.**

**2304.13.1** All building sites shall be graded to provide drainage under all portions of the building not occupied by basements.

**2304.13.2** 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.

**2304.13.3** 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.

***Section 2306 – Allowable Stress Design. Change Table 2306.2(2) to read as shown:***

**TABLE 2306.2(2)** (No Changes to Table)

**Notes**

a.- f. (No Change)

g.   ~~High-load diaphragms shall be subject to special inspection in accordance with Section 1705.5.1~~. Reserved

h.(No Change)

***Section 2308 – Conventional Light-Frame Construction. Change Section 2308.2 to read as shown:***

**2308.2 Limitations.** Buildings are permitted to be constructed in accordance with the provisions of conventional light-frame construction, subject to the following limitations, and to further limitations of Sections 2308.11 and 2308.12.

1. - 3. (No Change)

4.   Ultimate Design Wind Speeds, V*ult**~~V~~~~asd~~* ~~as determined in accordance with Section 1609.3.1~~ shall not exceed 115 ~~100~~ miles per hour (mph) (44 m/s) (3-second gust).

**~~Exception:~~***~~V~~~~asd~~* ~~as determined in accordance with Section 1609.3.1 shall not exceed 110 mph (48.4 m/s) (3-second gust) for buildings in Exposure Category B that are not located in a~~ *~~hurricane-prone region~~*~~.~~

5. - 7. (No Change)

**2308.2.1 Ultimate ~~Nominal~~ design wind speed greater than 115 ~~100~~ mph (3-second gust).** Where the Ultimate Design Wind Speed, V*ult* *~~V~~~~asd~~* ~~as determined in accordance with Section 1609.3.1~~ exceeds 115 ~~100~~ mph (3-second gust), the provisions of either AF&PA WFCM or ICC 600 are permitted to be used. Wind speeds in Figures 1609A, 1609B, and 1609C shall be converted in accordance with Section 1609.3.1 for use with ~~AF&PA WFCM or~~ ICC 600.

**SECTIONS 2309 – 2313**

**RESERVED.**

***Section 2314 High-Velocity Hurricane Zones. Add section 2314 to read as shown:***

**SECTION 2314**

**HIGH-VELOCITY HURRICANE ZONES**

**2314.1 Design.** Wood members and their fastenings shall be designed to comply with this code by methods based on rational analysis or approved laboratory testing procedures, both performed in accordance with fundamental principles of theoretical and applied mechanics.

**2314.2 Workmanship.** Wood members shall be framed, anchored, tied and braced to develop the strength and rigidity necessary for the purposes for which they are used and to resist the loads imposed as set forth in this code. Wood construction shall be in conformance with the tolerances, quality and methods of construction as prescribed by the standards in Chapter 35 of this code.

**2314.3 Fabrication.**

**2314.3.1** Preparation, fabrication and installation of wood members and the glues, connectors and mechanical devices for fastening shall conform to good engineering practice.

**2314.3.2** Any person desiring to manufacture or fabricate wood truss assemblies shall obtain a certificate of competency from the authority having jurisdiction.

**2314.4** The following Standards, as set forth in Chapter 35 of this code, are hereby adopted for the design and quality of wood members and their fastenings:

**2314.4.1** American Hardboard Products Association 887-B Wilmette Road, Palatine, IL 60067 AHA

1. Basic Hardboard ANSI/AHA A135.4-1982

2. Prefinished Hardboard Paneling ANSI/AHA A135.5-1982

3. Hardboard Siding ANSI/AHA A135.6-1990

4. Cellulosic Fiberboard ANSI/AHA A194.1-1985

5. Recommended Product and Application Specification - Structural Insulating Roof

Deck, I.B. Spec. No. 1

6. Recommended Product and Application Specification - 1/2 inch Fiberboard Nail-Base-Sheathing I.B. Spec. No. 2

7. Recommended Product and Application Specification - 1/2 inch Intermediate Fiberboard Sheathing I.B. Spec. No. 3

**2314.4.2** American Institute of Timber Construction 333 West Hampden Avenue, Englewood, CO 80110 AITC

1. Typical Construction Details, AITC 104

2. Code of Suggested Practices, AITC 106

3. Standard for Heavy Timber Construction, AITC 108

4. Standard for Preservative Treatment for Structural Glued Laminated Timber,

AITC 109

5. Standard Appearance Grades for Structural Glued Laminated Timber, AITC 110

6. Standard for Tongue and Groove Heavy Timber Roof Decking, AITC 112

7. Standard for Dimensions of Glued Laminated Structural Members, AITC 113

8. Standard Specifications for Structural Glued Laminated Timber of Softwood

Species, AITC 117

9. Standard Specifications for Hardwood Glued Laminated Timber, AITC 119

10. Technical Report No. 7, Calculation of Fire Resistance of Glued Laminated

Timber

11. Structural Glued Laminated Timber, ANSI/AITC A190.1

**2314.4.3** APA The Engineered Wood Association (Formerly APA American Plywood Association) P.O. Box 11700, Tacoma, WA 98411

1. APA Design Construction Guide, Residential and Commercial E30D

2. Plywood Design Specification Y510J

3. Plywood Design Specification-Design and Fabrication of Plywood Beams

Supplement No. 1 S811

4. Plywood Design Specification-Design and Fabrication of Plywood Beams

Supplement No. 2 S812

5. Plywood Design Specification-Design and Fabrication of Plywood Stressed-Skin

Panels Supplement No. 3 U813

6. Plywood Design Specifications-Design and Fabrication of Plywood Sandwich

Panels Supplement No. 4 U814

7. Plywood Design Specifications-Design and Fabrication of All-Plywood Beams.

Supplement No.5 H815

8. Plywood Folded Plate, Laboratory Report 21 V910

9. APA Design/Construction Guide Diaphragms L350

10. Performance Standards and Policies for Structural-Use Panels PRP-108

11. 303 Siding Manufacturing Specifications B840

**2314.4.4** American Society for Testing Materials 1916 Race Street, Philadelphia, PA 19103-1187 ASTM

1. Standard Test Methods for Mechanical Fasteners in Wood D 1761

2. Accelerated Weathering on Fire-Retardant Treated Wood for fire testing D 2898

3. Surface Burning Characteristics of Building Materials E 84

4. Hygroscopic Properties of Fire-Retardant Wood and Wood-Base Products D 3201

5. Standard Specifications for Adhesives for Field-Gluing Plywood to Lumber

Framing for Floor Systems D 3498

**2314.4.5** American Wood Preservers Association P.O. Box 361784, Birmingham, AL 35236-1784

1. AWPA Use Category Systems Standard U1.

2. AWPA Standard M4 Care of Pressure Treated Wood Products.

**2314.4.6** National Institute for Standards and Technology Standard Development Services Section, Standards Application and Analysis Division, Washington, D.C. 20234 NIST

1. Mat-Formed Particleboard CS236

2. Structural Glued Laminated Timber PS56

3. Construction and Industrial Plywood PS1

4. American Softwood Lumber Standard PS20

5. Performance Standard for Wood Based Structural Use Panels PS2{\*}

{\*} All wood-based structural panels except plywood shall have Product Approval and shall be tested in accordance with High-Velocity Hurricane Zone Testing Protocols.

**2314.4.7** American Forest and Paper Association, 1111 19 Street NW, Washington, D.C. 20036

1. ANSI/AF&PA National Design Specification for Wood Construction, ~~2001~~

2. ANSI/AF&PA Design Values for Wood Construction, ~~2005~~

3. Wood Structural Design Data~~, 1992~~

4. Span Tables for Joists and Rafters, ~~2005~~

5. Design Values for Joists and Rafters~~, 2005~~

6. Wood Construction Data No. 1, Details for Conventional Wood Frame Construction,

~~2001~~

7. Wood Construction Data No. 4, Plank-and-Beam Framing for Residential Building~~, 2003~~

8. Wood Construction Data No. 5, Heavy Timber Construction Details, ~~2004~~

9. Wood Construction Data No. 6, Design of Wood Frame Structures for Permanence, ~~2006~~

10. ANSI/AF&PA PWF-2007 Permanent Wood Foundation (PWF) Design Specification~~, 2007~~

11. ANSI/AF&PA WFCM-2001, Wood Frame Construction Manual for one and Two-Family Dwellings, ~~2001~~

12. ANSI/AF&PA SDPWS-2008 Special Design Provisions for Wind and Seismic~~, 2008~~

**2314.4.8** Timber Company, Inc. 2402 Daniels Street, Madison, WI 53704

TECO Performance Standards and Policies for Structural use Panels. PRP-133

**2314.4.9** Truss Plate Institute. 218 N. Lee Street, Suite 312, Alexandria, VA 22314

1. National Design Standard for Metal Plate Connected Wood Truss Construction (Excluding Chapter 2).

2. Building Component Safety Information (BCSI 1) Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses [A joint publication with the Wood Truss Council of America (WTCA)].

**2314.4.10** Reserved.~~Underwriters Laboratories, Inc. 333 Pfingsten Road, Northbrook, IL 60062 Test Methods for Fire Resistance of UL-790 Roof Covering Materials~~

***Section 2315 High-Velocity Hurricane Zones – Quality Modify section 2315 to read as shown:***

**SECTION 2315**

**HIGH-VELOCITY HURRICANE ZONES —**

**QUALITY**

**2315.1 Identification.** Reserved.~~All lumber used structurally, including end-jointed lumber, shall be identified by the grade mark of a lumber grading or inspection bureau or agency approved by the Board of Review of the American Lumber Standards Committee or the Canadian Lumber Standards Administrative Board: except that precut material, rough-sawn lumber and lumber thicker than 2 inches (51 mm) may be covered by a certificate of inspection in lieu of grade marking. The glued joints in end-jointed lumber, when used for load supporting purposes, shall be certified to be in accordance with the appropriate grading rules.~~

**2315.1.1** Reserved**.** ~~Structural glued-laminated timber shall be manufactured and identified as required in ANSI/AITC 190.1 as adopted in Section 2314.4.~~

**2315.1.2** Reserved.~~All wood-based structural panels used structurally, including siding, roof sheathing, wall sheathing, floor sheathing, diaphragms and built-up members, shall be identified for grade and exposure level by the grade stamp of an approved testing and grading agency indicating conformance with PS-1, PS-2, APA PRP-108 or TECO PRP-133 as adopted in Section 2314.4.~~

**2315.1.3** Wood shingles and/or shakes shall be identified by the grademark of an approved grading or inspection bureau or agency.

**2315.1.4** Reserved.~~Fiberboard for its various uses shall conform to ANSI/AHA A 1 94.1.~~

**2315.1.5** Reserved**.** ~~Hardboard shall conform to AHA Standards as adopted in Section 2314.4, and shall be identified as to classification.~~

**2315.1.6** Reserved**.** ~~Particleboard shall conform to the Mat-Formed Particleboard Standard, NIST CS Section 236, as adopted in Section 2314.4.6, and shall be identified by the grade mark or certificate of inspection issued by an approved agency.~~

**2315.1.7** Reserved. ~~All lumber and wood-based structural panels required to be fire retardant treated shall bear permanent identification showing the fire performance rating thereof issued by an approved testing agency having a follow-up service. When exposed to the weather the material shall be permanently identified as suitable for such use in accordance with Section 2327.4. When exposed to sustained high humidity, the material shall be permanently identified as a low hygroscopic type suitable for interior use. Allowable design values, including connection design values, for lumber, glued laminated timber and wood-based structural panels, pressure treated with fire retardant chemicals shall be obtained from the company providing the treatment and redrying services. Listing of allowable design values shall be submitted and approved by the certification agency.~~

**2315.1.8** Reserved.~~All lumber, sawn timber, wood-based structural panels and poles supporting permanent structures and required by this code to be pressure treated and as described in the AWPA standards shall bear the quality mark of an approved inspection agency which maintains continued supervision, testing and inspection over the product. Agencies shall be accredited in accordance with the procedures of the American Lumber Standard (PS 20) or approved equivalent.~~

**2315.1.9** Reserved.~~Pressure-treated poles shall be treated in accordance with AWPA U1 for sawn timber posts (Commodity Specification A, Use Category 4B) and for round timber posts (Commodity Specification B, Use Category 4B).~~

**2315.1.10** Reserved. ~~The quality mark shall contain, as a minimum, the following information:~~

~~1. The treating company and plant location.~~

~~2. The AWPA standard to which the product is treated.~~

~~3. The trademark of an approved inspection agency which maintains continued~~  ~~supervision, testing and inspection over the quality of the product as described in~~  ~~the AWPA standards.~~

~~4. The preservative used.~~

~~5. The amount of retention of the chemical per cubic foot of wood.~~

~~6. If applicable, the method of drying after treatment.~~

~~7. The purpose for which the wood has been treated: ground contact, above ground~~  ~~or foundation.~~

**~~Exception:~~** ~~When the size of individual pieces, e.g. lumber less than 1 inch (25 mm) in~~  ~~nominal thickness, or lumber less than nominal 1 inch by 5 inches (25 mm by 127 mm)~~  ~~or 2 inches by 4 inches (25 mm by 127 mm), or lumber 36 inches (914 mm) and shorter,~~  ~~except that 5/4 by 4 shall be quality marked, prevents application of full legible marks,~~  ~~the quality mark shall be applied by stamping the faces of exterior pieces or by end~~  ~~labeling not less than 2 percent of the pieces of a bundled unit.~~

**2315.1.11** All wood-based structural panels, including those made of fiberboard, hardboard and particleboard shall have Product Approval. Product Approval shall be given upon certification by an approved independent testing laboratory that the product:

1. Complies with the applicable standards set forth above.

2. The product complies with the manufacturer's published design properties before and after a wet-dry, wet-dry cycle.

3. The product when tested dry maintains a safety factor of 2:1 and when tested after the cycles specified in Section 2315.1.11(2) above maintains a safety factor of 1.5:1. Testing shall be as specified in the testing protocol.

**2315.2** Reserved.~~Wood-based structural panels permanently exposed in outdoor locations shall be rated for exterior use. When used for roof sheathing exposed to the outdoors on the underside or used structurally for wall, floor or roof cladding or for diaphragms, the panels shall be rated for Exposure 1 or exterior use.~~

**2315.3** All lumber 2 inches (51 mm) or less in thickness shall contain not more than 19 percent moisture at the time of permanent incorporation in a building or structure and/or at the time of treatment with a wood preservative.

**2315.4 Grade and species.**

**2315.4.1** All structural wood members not limited by other sections of this chapter shall be of sufficient size and capacity to carry all loads as required by the high-velocity hurricane provisions of Chapter 16 without exceeding the allowable design stresses specified in the National Design Specification for Wood Construction and in compliance with Section 2317.

**2315.4.2** Reserved.~~Lumber boards used for floor and roof sheathing shall be in accordance with Table 2315.4.2~~

**~~TABLE 2315.4.2~~**

**~~MINIMUM GRADE REQUIREMENTS: BOARD GRADES~~**

|  |  |
| --- | --- |
| **~~FLOOR OR ROOF SHEATHING~~** | **~~GRADING RULES~~** |
| ~~Utility~~ | ~~NLGA, WCLIB or WWPA~~ |
| ~~No. 4 Common or Utility~~ | ~~NLGA, WCLIB, WWPA, NHPMA or NELMA~~ |
| ~~No. 3~~ | ~~SPIB~~ |
| ~~Merchantable~~ | ~~RIS~~ |

***Section 2316 High-Velocity Hurricane Zones – Sizes. Modify section 2316 to read as shown:***

**SECTION 2316**

**HIGH-VELOCITY HURRICANE ZONES — SIZES**

**RESERVED**

**~~2316.1~~** ~~Sizes of lumber, structural glued-laminated timber and plywood and other wood-based structural panels referred to in this code are nominal sizes.~~

**~~2316.2~~** ~~Computations to determine the required sizes of members shall be based on net dimensions (actual sizes).~~

***Section 2317 High-Velocity Hurricane Zones – Unit Stresses. Modify section 2317 to read as shown:***

**SECTION 2317**

**HIGH-VELOCITY HURRICANE ZONES —**

**UNIT STRESSES**

**2317.1 General.**

**2317.1.1** Lumber used for joists, rafters, trusses, columns, beams and/or other structural members shall be of no less strength than No. 2 grade of Southern Pine, Douglas Fir-Larch, Hem-Fir or Spruce-Pine-Fir. Joists and rafters shall be sized according to AF&PA Span Tables for Joists and Rafters adopted in Section 2314.4.

**2317.1.2** Lumber used for studs in exterior walls and interior bearing walls shall be of no less strength than stud grade of Southern Pine, Douglas Fir-Larch, Hem-Fir or Spruce-Pine-Fir and capable of resisting all loads determined in accordance with Chapter 16 (High-Velocity Hurricane Zones). The unbraced height of the wall shall be no more than 8 feet 6 inches (2.6 m) (including top and bottom plates). Heights may be increased where justified by rational analysis prepared by a registered professional engineer or registered architect proficient in structural design.

**2317.1.3** Reserved. ~~Lumber used for studs in interior non-bearing walls shall have a modulus of elasticity of no less than 0.9 × 106 pounds per square inch.~~

**2317.1.4** The designer shall specify on the design drawings the size, spacing, species and grade of all load supporting members.

**2317.2** Allowable stress design value may be modified for repetitive, duration, etc., factors where design is by a registered professional engineer or registered architect proficient in structural design or where such modified values are reflected in the tables of the standards in Section 2314.4.

***Section 2318 High-Velocity Hurricane Zones - Vertical Framing. Modify section 2318 to read as shown:***

**SECTION 2318**

**HIGH-VELOCITY HURRICANE ZONE —**

**VERTICAL FRAMING**

**2318.1 Studs in bearing and exterior walls.** Studs in walls framing over 8 feet 6 inches (2.6 m) (including top and bottom plates) or supporting floor and roof loads shall be designed by rational analysis prepared by a registered professional engineer or registered architect proficient in structural design.

**2318.1.1 Minimum size.** Studs shall be not less than 2 inch by 6 inch for exterior walls or 2 inch by 4 inch (51 mm by 102 mm) for interior bearing or load resisting walls unless designed by rational analysis by a registered professional engineer or registered architect proficient in structural design.

**2318.1.2 Spacing.** Studs shall be spaced not more than 16 inches (406 mm) on center unless designed by rational analysis as a system of columns and beams by a registered professional engineer or registered architect proficient in structural design.

**2318.1.3 Placing.**

**2318.1.3.1** Studs in exterior and bearing walls shall be placed with the longer dimension perpendicular to the wall.

**2318.1.3.2** Studs in exterior walls and in bearing walls shall be supported by foundation plates, sills, or girders or floor framing directly over supporting walls or girders. Stud bearing walls when perpendicular to supporting joists may be offset from supporting walls or girders not more than the depth of the joists unless such joists are designed for the extra loading conditions.

**2318.1.3.3** Stud walls framing into base plates of exterior walls and interior bearing walls resting on masonry or concrete shall be anchored past the plate to the masonry or concrete, or shall be anchored to a sill plate which is anchored in accordance with Section 2318.1.4.1 when the net wind uplift is up to 500 pounds per foot (7297 N/m).

**2318.1.4 Sills and/or base plates.**

**2318.1.4.1** Sills and/or base plates, where provided in contact with masonry or concrete, shall be of an approved durable species or be treated with an approved preservative and shall be attached to the masonry or concrete with 1/2 inch (13 mm) diameter bolts with oversized washer spaced not over 2 feet (610 mm) apart and embedded not less than 7 inches (178 mm) into a grout filled cell of masonry or into concrete. Base plates shall be placed in a recess 3/4 inch (19 mm) deep and the width of the base plate at the edge of a concrete slab, beam/slab or any other type of construction which uses a masonry surface or concrete slab, or be provided with an alternate waterstop method as approved by the building official. Alternate methods of anchorage may be designed by rational analysis by a registered professional engineer or a registered architect proficient in structural design.

**2318.1.4.2** Where the base plate of a bearing wall is supported on joists or trusses running perpendicular to the wall and the studs from the wall above do not fall directly over a joist or truss, a double base plate or a single base plate supported by a minimum 2 inch by 4 inch (51 mm by 102 mm) inset ribbon shall be used to support the upper stud wall.

**2318.1.5** Top plates.

**2318.1.5.1** The top plate of stud bearing walls shall be doubled and lapped at each intersection of walls and partitions.

**2318.1.5.2** Joints shall be lapped not less than 4 feet (1219 mm).

**2318.1.6** Corners. Corners of stud walls and partitions shall be framed solid by not less than three studs.

**2318.1.7** Splicing. Studs, other than end-jointed lumber, shall be spliced only at points where lateral support is provided.

**2318.1.8 Framing types.**

**2318.1.8.1** Wood framing may be any one, or a combination of, the following types: platform, balloon, plank and beam or pole type.

**2318.1.8.2** Exterior stud walls of two-story buildings shall be balloon-framed with studs continuous from foundation to second floor ceiling and with second floor joists supported as indicated in Section 2319.3.3. Gable end walls in wood frame buildings shall be balloon framed with studs continuous from foundation to roof.

**Exception:** Platform framing is allowed in buildings over one story in height provided an additional mandatory inspection for floor level connectors is made before the framing/firestopping inspection. Gable end walls shall be balloon framed with studs continuous from top floor to roof.

**2318.1.9 Notching.**

**2318.1.9.1** Studs that carry loads in excess of 75 percent of their capacity shall not be notched or cut.

**2318.1.9.2** Studs that carry loads 75 percent or less of their capacity may be notched to one-third of the depth without limit of the number of consecutive studs.

**2318.1.10** Pipes in walls.

**2318.1.10.1** Stud walls and partitions containing pipes shall be framed to give proper clearance for the piping.

**2318.1.10.2** Where walls and partitions containing piping are parallel to floor joists, the joists shall be doubled and may be spaced to allow vertical passage of pipes.

**2318.1.10.3** Where vertical pipe positions necessitate the cutting of plates, a metal tie not less than 1 inch by 1/8 inch (25 mm by 3 mm) shall be placed on each side of the plate across the opening and nailed with not less than two 16d or three 8d nails at each end.

**2318.1.11 Headers.**

**2318.1.11.1** All headers in bearing walls shall be designed by rational analysis.

**2318.1.11.2** Headers or lintels over stud wall openings shall have not less than nominal 2-inch (51 mm) bearings.

**2318.1.12** Studs joining masonry or reinforced concrete walls. Where stud walls or partitions join masonry or concrete walls, such studs shall be secured against lateral movement by bolting to the masonry or concrete with 1/2 inch (13 mm) diameter anchor bolts with oversized washer spaced not more than 4 feet (1219 mm) apart and embedded not less than 5 inches (127 mm) into a grout filled cell or into concrete or as designed by a registered professional engineer or registered architect proficient in structural design using rational analysis.

**2318.1.13** Wind bracing. Exterior stud walls shall be effectively wind-braced in accordance with Section 2322.3. Such bracing shall be designed by a registered professional engineer or registered architect proficient in structural design.

**2318.1.14** The intermixing of wall framing described in this chapter with other types of structural wall systems as provided in this code shall not be permitted unless such wall framing and connections are designed by a registered professional engineer or registered architect proficient in structural design.

**2318.1.15** Reserved. ~~Wall hung fixtures. Studs in bearing walls, exterior walls and nonbearing partitions supporting w0all hung plumbing fixtures and wall cabinets shall be not less than 2x4, where spaced not more than 16 inches (406 mm) on center or, not less than 2 inch by 6 inch (51 mm by 152 mm), where spaced not more than 24 inches (610 mm) on center.~~

**~~2318.1.15.1~~** ~~A minimum 2-inch by 4-inch (51 mm by 104 mm) horizontal wood~~  ~~member, securely fastened to not less than two such studs, shall be installed for~~  ~~the attachment of each wall hung plumbing fixture and wall cabinet.~~

**2318.2 Interior nonbearing partitions.** Reserved.

**~~2318.2.1~~** ~~Studs in interior nonbearing partitions shall be of not less than 2 inch by 4 inch (51 mm by 104 mm) spaced not more than 24 inches (610 mm) o.c.~~

**~~2318.2.2~~** ~~Interior nonbearing stud partitions may have a single top plate.~~

**~~2318.2.3~~** ~~Headers over openings not exceeding 4 feet (1219 mm) in width may be of 2inch (51 mm) nominal thickness placed flat and end-nailed through the studs with no solid bearing provided.~~

**~~2318.2.4~~** ~~Studs in interior nonbearing partitions shall be placed with the longer dimension perpendicular to the partition.~~

**~~318.2.5~~** ~~Stud partitions subject to frequent wetting shall be of pressure treated wood or shall be protected with 15-pound asphalt-saturated felt, or by other approved design methods.~~

**~~2318.2.6~~** ~~Wardrobe units serving as nonbearing partitions, prefabricated or partially prefabricated may be of 2-inch by 2-inch (51 mm by 51 mm) studs spaced not farther apart than 16 inches (406 mm) provided there is a wood-based structural panel skin-glued or nailed to the studs.~~

**2318.3 Columns and posts.**

**2318.3.1** Columns and posts shall be framed to true end bearing, shall be securely anchored against lateral and vertical forces, and shall be designed by a registered professional engineer or registered architect proficient in structural design.

**2318.3.2** Reserved. ~~The bottom of columns and posts shall be protected against deterioration by an approved product or method.~~

**2318.3.3** Columns and posts shall be spliced only in regions where lateral support is adequately provided about both axes and is designed by rational analysis. Such design shall be prepared, signed and sealed by a registered professional engineer or registered architect proficient in structural design.

**2318.3.4** Design dimensions of columns and posts shall not be reduced by notching, cutting or boring.

***Section 2319 High-Velocity Hurricane Zones - Horizontal Framing. Modify section 2319 to read as shown:***

**SECTION 2319**

**HIGH-VELOCITY HURRICANE ZONES –**

**HORIZONTAL FRAMING**

**2319.1 Size.**

**2319.1.1** The minimum size of joists and rafters shall be as set forth in Section 2317.

**2319.1.2** The design of horizontal framing other than joists and rafters shall be as set forth in Section 2317.1.1.

**2319.1.3**Reserved. ~~Horizontal wood members independently supporting a suspended ceiling shall be not less than 2-inch by 4-inch (51 mm by 102 mm) and hangers shall be not less than the equivalent of 1-inch by 4-inch (25 mm by 102 mm) wood members providing proper nailing.~~

**2319.2 Spacing**. Reserved. ~~Joists and rafters, where a plaster ceiling is directly supported, shall comply with Section 2507.2.3.~~

**2319.3 Bearing.**

**2319.3.1** Joists and rafters shall have not less than three inches of bearing, on wood, metal, grout filled masonry or concrete except as provided in Sections 2319.3.2, 2319.3.3 and 2319.3.4.

**2319.3.2 Masonry and concrete.**

**2319.3.2.1** Joists and rafters may bear on and be anchored by steel strap anchor embedded into a grout filled cell of the masonry or reinforced concrete, as described in Sections 2321.5.1, to a wood plate provided such wood plate is of an approved durable species or pressure treated with an approved preservative and such plate shall be not less than 2 inch by 4 inch (51 mm by 102 mm) and attached as per Section 2318.1.4.1. The net uplift on the plate shall be limited to 300 pounds per foot (4378 N/m).

**2319.3.2.2** Joists and rafters may bear on a Product Approved channel-shaped metal saddle and fastened to the masonry by a steel strap anchor embedded into a grout filled cell of the masonry or concrete.

**2319.3.2.3** Joists and rafters may bear on masonry, provided that each joist or rafter in contact with masonry is of an approved durable species or pressure treated with an approved preservative and anchored as in Section 2319.3.2.2 above.

**2319.3.3** Floor joists may butt into a header beam if effectively toenailed and if an approved metal hanger providing not less than 3 inches (76 mm) of bearing transmits the vertical load to the top of the header, provided, however, that approved devices or other approved means of support may be used in lieu of such bearing. All hangers and devices shall have Product Approval.

**2319.3.4** Ceiling joists may butt into a header beam, as set forth for floor joists, or approved devices or other approved means of support may be used in lieu of such bearing. All devices shall have Product Approval.

**2319.3.5** In lieu of the above, bearing and anchorage may be designed by rational analysis by a registered professional engineer or registered architect proficient in structural design.

**2319.4** Splicing. Horizontal members shall not be spliced between supports except that properly designed splices or approved end-jointed lumber may be used.

**2319.5** **Notching and boring.**

**2319.5.1** Unless local unit stresses are calculated on the basis of reduced size, wood members in bending shall not be cut, notched or bored except as provided in Sections 2319.5.1.1 and 2319.5.1.2.

**2319.5.1.1** Notches may be cut in the top or bottom not deeper than one-sixth of the depth not longer than one-third of the depth of the member and shall not be located in the middle one-third of the span. Where members are notched at the ends, over bearing points, the notch depth shall not exceed one-fourth the member depth.

**2319.5.1.2** Holes may be bored in the middle one-third of the depth and length and not larger than one-sixth of the depth. Space between any two holes in the same joist shall be not less than the depth of the joist.

**2319.5.2** Where necessary to run service pipes in the space between the ceiling and floor larger than can be accommodated by the above provision, such ceilings shall be furred or provision made for headers or beams and/or for changing direction of the joists where the design permits.

**2319.6 Openings.**

**2319.6.1** Joists shall be doubled adjacent to openings where more than one joist is cut out or shall be so increased in size or number as may be needed to meet the stress requirements.

**2319.6.2** Headers shall be of the same size as the joists and where supporting more than one joist shall be double members.

**2319.6.3** Headers shall be supported by approved metal hangers or ledgers or other approved members.

**2319.7 Wood entering masonry or reinforced concrete.**

**2319.7.1** Wood joists, beams or girders which frame into masonry or reinforced concrete shall have a minimum of 1/2-inch (12.7 mm) air space at the top, end and sides or shall be preservative pressure treated or of an approved durable species.

**2319.7.2** Where masonry extends above such wood members, joists shall be fire-cut so the top edge does not enter the masonry more than 1 inch (25 mm) or shall be provided with wall plate boxes of self-releasing type or approved hangers.

**2319.7.3** Reserved**.**  ~~Where joists enter a masonry wall required to be fire resistive, such joists shall be separated from the opposite side of the wall by at least 4 inches (102 mm) of solid masonry.~~

**2319.8 Floor joists.** Reserved**.**

**~~2319.8.1~~** ~~Floor joists under all walls or partitions parallel to the joists shall be doubled.~~

**~~2319.8.2~~** ~~Doubled joists may be separated not more than 6 inches (152 mm).~~

**~~2319.8.3~~** ~~Floor joists supporting concrete or grout for tile floors shall have a maximum spacing of 12 inches (305 mm).~~

**2319.9 Ceiling joists.**

**2319.9.1** In buildings with pitched roofs the ceiling joists, where practicable, shall be nailed to the rafters and shall be designed to carry all imposed loads including but not limited to lateral thrust.

**2319.9.2** Ceiling joists spanning more than 10 feet (3 m) shall be laterally supported at midspan.

**2319.9.3** Ceiling joists shall not be used to support rafter loads unless the joists and connections are properly designed for the total load being imposed.

**2319.10 Roof framing**. The permit documents shall include roof framing plans showing spacing and spans of all roof members indicating any fabricated elements to be designed and furnished by others and shall include the details for support and bearing of the roof structural system, for the permanent cross/lateral/diagonal bracing and anchorage required to resist dead, live and wind loads as set forth in Chapter 16 (High- Velocity Hurricane Zones). The framing plans shall also indicate the uplift forces applied on the roof, sheathing type, thickness and nailing requirements for the sheathing. The roof framing plans shall be prepared by and bear the sign and seal of, a registered professional engineer or registered architect of record proficient in structural design.

**2319.11** **Roof joists.** Roof joists may cantilever over exterior walls as limited by the allowable stress, but the length of such cantilever shall not exceed one-half the length of the portion of the joist inside the building; and where the cantilever of tail joists exceeds 3 feet (914 mm), the roof joist acting as a header shall be doubled.

**2319.12 Roof rafters.**

**2319.12.1** Hip rafters, valley rafters and ridge boards shall be provided and shall be not less in size than the largest rafter framing thereto nor less than required to support the loads.

**2319.12.2 Collar ties.**

**2319.12.2.1** Collar ties and their connections shall be provided to resist the thrust of rafters and shall be designed by a registered engineer or registered architect proficient in structural design.

**2319.12.2.2** Collar ties shall not be required if the ridge is designed as a supporting beam. Such design shall be done by a registered professional engineer or registered architect proficient in structural design.

**2319.12.2.3** Ceiling joists may serve as collar ties when properly designed by a registered professional engineer or registered architect proficient in structural design.

**2319.12.3** The actual roof and ceiling dead loads may be used to resist uplift loads, but the maximum combined dead load used to resist uplift loads shall not exceed 10 pounds per square foot (479 Pa).

**2319.13** Heavy timber construction. Heavy timber construction of floors or roofs shall comply with the standards in Section 2314.4. All heavy timber construction shall be designed by a registered professional engineer or registered architect proficient in structural design to withstand the loads required in Chapter 16 (High-Velocity Hurricane Zones).

**2319.14** Vertically laminated beams. Vertically laminated built-up beams shall be designed and made up of members continuous from bearing to bearing.

**2319.15** Glued-laminated members. Glued-laminated members shall be designed to comply with applicable AITC standards adopted by this code.

**2319.16 Stair stringers.** Reserved.

**~~2319.16.1~~** ~~Stair stringers shall, where practicable, be framed to provide 4 inches (102 mm) of bearing at the ends.~~

**~~2319.16.2~~** ~~Where it is not practicable to provide such bearing, the stringers shall be hung~~  ~~in steel hangers of approved type.~~

**~~2319.16.3~~** ~~Stair stringers shall not be notched or cut in the effective area.~~

**~~2319.16.4~~** ~~Two stringers shall be provided for each flight of stairs no more than 36 inches (914 mm) in width, and an additional stringer shall be provided for each 18 inches (457 mm) of additional stair width except for public stairs where the number of stringers shall be determined by rational analysis by a registered professional engineer or registered architect proficient in structural design.~~

**2319.17 Wood trusses.**

**2319.17.1 Trussed rafters.** Trussed rafters shall be designed by methods admitting of rational analysis by a registered professional engineer or registered architect proficient in structural design based on the standards set forth in Section 2314.4.

**2319.17.1.1** Where steel is used for connecting wood members, such connectors shall be not less than 20 U.S. gage and shall be protected with a zinc coating conforming to ASTM A 361 set forth in Chapter 35 of this code. Connectors shall have Product Approval or shall be designed by methods admitting of rational analysis by a registered professional engineer or registered architect proficient in structural design.

**2319.17.1.2** Where a ceiling is to be attached directly to the underside of trusses, the trusses shall be laterally braced with continuous 1-inch by 4-inch (25 mm by 102 mm) members nailed with 8d common nails to the upper side of the bottom chord at panel points but not to exceed 10 feet (3 m) apart. This lateral bracing shall be restrained at each end and at 20-foot (6 m) intervals. Drywall may be considered a rigid ceiling in enclosed areas where it is protected from the elements. The drywall ceiling is not to be considered a ceiling diaphragm.

**2319.17.1.3** Where a ceiling is to be attached to wood stripping which is nailed to the underside of the bottom chord of trusses with two-8d common nails at each intersection, stripping shall be not less than 1 inch by 3 inches (25 mm by 76 mm) spaced not more than 24 inches (610 mm) apart. Wood stripping may be replaced by furring channels. Furring channels shall be a minimum of 7/8 inch (22 mm) hat-shaped channels weighing 287 pounds per 1000 lineal feet (41.4 kg per 100 m) with minimum based steel of 0.0179 inch (0.445 mm) and complying with ASTM C 645 attached to trusses with minimum two #6 1-1/4 inch (32 mm) screws per intersection. Said stripping or metal furring channels may serve also as the lateral bracing of the truss bottom chord so as to minimize the effects of buckling of the bottom chord when subjected to compressive stresses under reverse load conditions. In addition, the rigid ceiling that is created by this 1-inch by 3-inch (25 mm by 76 mm) stripping or metal furring channels must also be restrained from lateral movements, in accordance with the details provided by the architect or professional engineer of record.

**Exception:** Where fire-rated design assembly does not allow for this specific installation, see Section 2319.17.1.2

**2319.17.1.4** Where a ceiling is attached to wood members suspended beneath trusses, the provisions of Section 2319.1 shall apply.

**2319.17.2 Prefabricated wood trusses.** Prefabricated wood trusses shall comply with this section.

**2319.17.2.1 Design.**

**2319.17.2.1.1** Prefabricated wood trusses shall be designed by a registered professional engineer (delegated engineer) and fabricated in accordance with the National Design Standard for Metal Plate Connected Wood Truss Construction of the Truss Plate Institute (TPI). The truss system designer (delegated engineer) shall prepare the truss system shop drawings. Such shop drawings shall be submitted to the building official for review and approval. The shop drawings shall meet the following requirements:

1. All shop drawings shall be in conformity with the architect or engineer of record framing plans unless prior written approval is obtained from the architect or engineer of record. If reframing is approved, the architect or engineer of record shall resubmit revised framing plans to the building official after receiving updated plans from the delegated engineer showing all adjustments necessary to safely transmit all applied loads to the foundation.

2. Permanent bracing of individual truss members may be required on certain members of the trusses to prevent the members from buckling in the plane normal to the trusses (buckling in the narrow direction). This bracing shall be designed for both upward and downward loads and shall be shown on the individual truss drawings (truss engineering usually shown on 81/2-inch by 11-inch (216 mm by 279 mm) sheets ("A" size drawings). The design of this bracing shall be the responsibility of the delegated engineer. The contractor shall be responsible for seeing that this bracing is properly installed. This bracing may be in the form of (but not limited) to "T" bracing of an individual member, or lateral bracing of a series of members common to a number of trusses. Where lateral bracing is used, this bracing shall be restrained against lateral movement, in accordance with details provided by the delegated engineer or by the architect or professional engineer of record. All details and sections required to show the size and connections of all secondary members will be supplied on the delegated engineering plans and shall show all framing, connections and bracing on one or more primary plans of minimum size 24 inches by 36 inches (610 mm by 914 mm).

3. A size 81/2-inches by 11-inches (216 mm by 279 mm) cut sheets showing individual member design shall also be furnished to the architect or engineer of record so that all gravity and uplift loads shown on these cut sheets can be transferred to the primary plans.

4. The size and location of all plates at each joint shall be shown on the truss design drawings.

5. The connection between trusses shall be detailed in the shop drawings. Hip sets shall be detailed in a manner to indicate all connections according to engineering drawings for the attachment of skewed members.

6. Truss design drawings shall indicate the support and minimum bearing of the roof structural system, the permanent cross/lateral bracing, bracing to transfer member buckling forces to the structure and all bracing and anchorage required to resist uplift and lateral forces.

7. Flat and floor trusses must be clearly marked so that they will be installed right side up. These marks must remain after the flooring, sheathing and insulation have been installed.

The intent of the above requirements is to provide all information on framing, connections and bracing on one composite set of plans approved by the architect or engineer of record to aid in the review, approval and field inspections for the portion of the property.

**2319.17.2.1.2** Trusses shall be designed for wind loads per Chapter 16 (High-Velocity Hurricane Zones), uniformly distributed live, dead and concentrated loads, and such loads shall be indicated on the roof framing plans and the truss design drawings. Where a girder or truss is subjected to concentrated loads or any unusual loading condition, such conditions must be clearly indicated on the roof framing plans and on the truss design drawings. Where truss members have been cut, shifted or altered in any manner to meet construction needs or for any other reason, additional drawings and additional calculations must be prepared, signed and sealed by the truss designer (a Florida-delegated engineer). Such additional drawings and calculations must be approved by the engineer or architect of record and must be submitted to the building official for review and approval.

**2319.17.2.1.3** Roof trusses shall be designed for a minimum live load of 30 psf (1436 Pa), a minimum dead load of 15 psf (718 Pa) on the top chord, and a minimum dead load of 10 psf (479 Pa) on the bottom chord; and wind loads per Chapter 16 of this code. Where the roof design is such that water is not directed to the interior of the roof and there are no parapets or other roof edge drainage obstructions, roof trusses with slopes of 1 ½:12 or greater may be designed for a live load of 20 psf (958 Pa) and a minimum total load of 45 psf (2155 Pa). Adjustment of the allowable design stress for load duration shall be in accordance with National Design Specification for Wood Construction.

**2319.17.2.1.4** The allowable deflection under live load for trusses shall not exceed span/360 for plastered ceilings, span/240 for unplastered finished ceilings, or span/180 for trusses without a ceiling.

**2319.17.2.1.5** Flat roof trusses shall be designed for not less than the loads set forth in Section 2319.17.2.1.3 above, except that the dead load on the top chord may be taken as 10 psf (479 Pa) in lieu of 15 psf (718 Pa), and the total load reduced to 50 psf (2394 Pa). Adjustment of the allowable design stress for load duration shall be in accordance with National Design Specification for Wood Construction ~~except that load duration factor for wind loads shall not exceed 1.33~~. Mo- check with Miami-Dade

**2319.17.2.1.6** Where gable end trusses are permitted in this code, they shall be designed for a minimum live load of 30 psf (1436 Pa) and a minimum dead load of 15 psf (718 Pa) on the top chord. The minimum load of 10 psf (479 Pa) on the bottom chord may be omitted where continuous support is provided. In addition, the gable end trusses shall be designed to sustain wind load as specified in Chapter 16 (High-Velocity Hurricane Zones) but not less than 30 psf (1436 Pa) perpendicular to the plane of the truss. Such trusses shall use a rationally designed system to resist lateral wind loads and be anchored to the substructure at intervals no greater than 4 feet (1219 mm) on center to resist the uplift forces and shall be designed to transfer the loads to the substructure. The design of the system used to resist the lateral loads imposed on the truss shall be prepared by the engineer or architect of record.

**2319.17.2.1.7** When girders exceed two members and when girder reactions exceed the capacity of standard connectors or hangers, these reactions shall be shown on the drawings and the connection must be designed, signed and sealed by a registered professional engineer or registered architect proficient in structural design and such design shall be included as part of the shop drawings.

**2319.17.2.1.8** All trusses shall be properly braced to act as a system. Such bracing shall be included as part of the design document.

**2319.17.2.2 Materials and specifications.**

**2319.17.2.2.1** Trusses shall be fabricated applying the design values listed in the standard Design Values for Wood Construction of the American Forest and Paper Association.

**2319.17.2.2.2** Top and bottom chords shall be of No. 2 Grade or better. Web members shall be of No. 3 Grade or better. A chord member is defined as the entire top or bottom truss member which may consist of shorter spliced pieces.

**2319.17.2.2.3** For trusses spanning 20 feet (6 m) or less, the minimum percentage of grade-marked members among top and bottom chords shall be 50 percent.

**2319.17.2.2.4** For trusses spanning more than 20 feet (6 m) the minimum percentage of grade-marked members among top and bottom chords shall be 75 percent, and there shall be a minimum of one marked web on each truss.

**2319.17.2.2.5** All lumber shall be 2 inches by 4 inches (51 mm by 102 mm) nominal or larger, and no 2 inch (51 mm) nominal member shall be less in size than 1 ½ inch (38 mm).

**2319.17.2.2.6** The moisture content of all lumber used in wood truss fabrication shall not exceed 19 percent.

**2319.17.2.2.7** Connector plates shall be not less than 20 gauge galvanized steel meeting ASTM A 653/A 653M or A 924/A 924M, and shall be identified by the manufacturer's stamp. The size and location of all plates shall be shown on the truss design drawings. Connectors shall have product approval.

**2319.17.2.2.8** All connector plates over 3 inches (76 mm) and 25 percent of 3 inches (76 mm) or less, as per TPI standards, shall bear the name, logo or other markings, which clearly identify the manufacturer. Semiannually, plate manufacturers shall certify compliance with the provisions of Section 6 of the Truss Plate Institute, TPI, National Design Standard for Metal Plate Connected Wood Truss Construction, with respect to the grade of steel, thickness or gauge of material, and galvanizing to ASTM G 60 as a minimum. This certification requirement shall be satisfied by submitting by an approved independent laboratory to the certification agency.

**2319.17.2.3 Fabrication.**

**2319.17.2.3.1** Manufacturers of prefabricated wood truss assemblies shall obtain a valid certificate of competency from the authority having jurisdiction.

**2319.17.2.3.2** Each truss shall bear the fabricators stamp on a web member and 75 percent shall be placed so as to be clearly visible after erection and before placement of ceiling.

**2319.17.2.3.3** Multiple member girder trusses shall be predrilled at the truss plant for connection bolts only. Hanger bolt holes shall be drilled on-site on location indicated on approved drawings.

**2319.17.2.3.4** Each manufacturer or fabricator shall retain the services of applicable organizations among those listed below for monthly inspections of the lumber grade used in fabrication. Following each inspection, a report shall be submitted by the inspection agency to the authority having jurisdiction. All inspection agencies providing any type of inspection services shall be approved by the authority having jurisdiction.

For Pine: Southern Pine Inspection Bureau or Timber Products grading agencies with appropriate jurisdiction.

For Douglas Fir, Hem-Fir or Fir-Larch: Western Wood Products Association or West Coast Lumber Inspection Bureau. Timber Products Inspection Inc. or other grading agencies with appropriate jurisdiction.

**2319.17.2.3.5** In addition, the fabricator shall employ an approved testing laboratory to conduct inspections of fabrication compliance. Such inspections shall be made unannounced and at random at least once a month. Following each inspection, a report on approved forms shall be submitted by the laboratory to the authority having jurisdiction and such reports shall bear the date, signature and seal of the supervising Florida-registered architect or professional engineer.

**2319.17.2.3.6** When there is evidence of noncompliance with the provisions for fabrication set forth in this paragraph or with the approved plans, the authority having jurisdiction may require the inspection laboratory to make additional job-site or plant inspections.

**2319.17.2.3.7** The authority having jurisdiction may require load testing on noncomplying wood trusses. The test results shall be reported to the authority having jurisdiction.

**2319.17.2.3.8** Failure of units tested or receipt of inspection reports indicating fabrication not in accordance with approved truss design drawings, or failure to submit required inspection and/or test reports, shall be cause for suspension or revocation of the certificate of competency of the manufacturer or fabricator.

**2319.17.2.4 Truss erection.**

**2319.17.2.4.1** Reserved. ~~All trusses shall be erected in accordance with TPI/WTCA BCSI 1 in addition to any requirements indicated on the approved permit document.~~

**2319.17.2.4.2** Reserved. ~~For trusses having an overall length of the bottom chord in excess of 35 feet (10.7 m) or 6 feet (1829 mm) overall height erection shall be supervised by either a registered professional engineer or registered architect retained by the contractor. A retainer letter from the registered professional engineer or registered architect shall be submitted along with the shop drawings as part of the permit document.~~

**2319.17.2.4.3** Reserved. ~~Temporary bracing shall be required during the erection of~~ r~~oof trusses to keep the trusses in a true plumb position and to prevent toppling of the trusses during erection, until the roof sheathing is applied. The provisions for temporary bracing shown in TPI/WTCA BCSI 1 shall be used for this bracing or a professional engineer or architect shall design the temporary bracing system. The ultimate responsibility to see this bracing is installed properly during the erection process lies with the permit holder. This bracing is extremely important for the protection of life and property during the erection process. Temporary truss bracing shall always be required.~~

**2319.17.2.4.4** At gable ends, this diaphragm shall be designed to transmit lateral loads imposed on the gable to roof diaphragms and/or ceiling diaphragms where available. Where the wall supporting the gable is not designed to withstand lateral loads independent of the gable (by using shear walls or other methods), anchorage of the gable to the wall shall be designed to transmit the loads from the wall to the bracing and the bracing designed to transmit the lateral loads from the gable and wall to the roof diaphragms and/or ceiling diaphragms where available. Ceiling diaphragms that provide lateral support at gable walls shall be designed by the architect or professional engineer of record, and shall have continuous bottom chord bracing, end restraints, intermediate restraints and conditions so as to sufficiently transfer the lateral loads at the top of the gable end walls to the intersecting shear walls. In no case shall the rigid ceiling as defined in Section 2319.17.1.2 be used as an integral part of the system needed for lateral bracing of the gable end walls.

**2319.17.2.4.5** Reserved. ~~Where masonry or reinforced concrete extends above wood trusses; trusses shall be designed so as not to compromise the structural integrity of the masonry or concrete wall it abuts in the event of collapse caused by fire.~~

***Section 2320 High-Velocity Hurricane Zones - Firestops. Modify to read as shown:***

**SECTION 2320**

**HIGH-VELOCITY HURRICANE ZONES —**

**FIRESTOPS**

**~~2320.1~~** ~~Firestopping shall be provided to cut off all concealed draft spaces both vertical and horizontal.~~

**~~2320.1.1~~** ~~Firestops shall form effective fire barriers between stories and between a story and roof space.~~

**~~2320.1.2~~** ~~Firestopping shall be tightly and securely fitted into place and where of wood, shall be not less than a nominal 2 inches (51 mm) in thickness.~~

**~~2320.1.3~~** ~~Spaces between chimneys and wood framing shall be solidly filled with mortar or loose incombustible materials supported on incombustible supports.~~

**~~2320.1.4~~** ~~Firestopping shall consist of 2-inch (51mm) nominal lumber, or two thicknesses of 1 inch (25 mm) nominal lumber with broken lap joints, or 1 thickness of 23/32 inch (18 mm) plywood, with joints backed by 23/32 inch (18 mm) plywood, or other approved materials.~~

**~~2320.1.5~~** ~~Draftstopping materials shall be not less than 3/8 inch (9.5 mm) plywood or other approved materials adequately supported.~~

**~~2320.1.6~~** ~~Required firestops and draftstops shall be continuous, and such continuity shall be maintained throughout. Penetrations of firestops or draft stops shall be sealed or protected in an approved manner.~~

**~~2320.1.7~~** ~~Ventilation of concealed roof spaces shall be maintained in accordance with Section 2326.3.2.~~

**~~2320.2~~** ~~Firestopping shall be installed in wood frame construction in the locations specified in Sections (2320.2.1 through 2320.2.6.)~~

**~~2320.2.1~~** ~~In concealed spaces of stud walls and partitions including furred spaces at ceiling and floor levels to limit the maximum dimension of any concealed space to 8 feet (2438 mm).~~

**~~2320.2.2~~** ~~At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings, cove ceilings and similar features.~~

**~~2320.2.3~~** ~~In concealed spaces between stair stringers at least once in the middle of each run, at the top and bottom, and between studs along and in line with adjacent run of stairs of the run.~~

**~~2320.2.4~~** ~~At openings around vents, pipes, ducts, chimneys and fireplaces at ceiling and floor levels with approved noncombustible materials, except in the case of approved metal chimney installation.~~

**~~2320.2.5~~** ~~In concealed spaces created by an assembly of floor joists, firestopping shall be provided for the full depth of the joists at the ends and over the support.~~

**~~2320.2.6~~** ~~Around the top, bottom and sides of door pockets.~~

**~~2320.3~~** ~~Draftstopping. Draftstopping shall be provided in wood frame construction in the locations specified in Sections 2320.3.1 and 2320.3.2.~~

**~~2320.3.1 Floor-ceiling assemblies.~~**

**~~2320.3.1.1 Group B and M occupancies.~~** ~~In the floor-ceiling assemblies above and in line with the tenant separation, when tenant separation walls do not extend to the floor sheathing above.~~

**~~2320.3.1.2 Groups R1, R2 and R4 occupancies.~~** ~~In floor-ceiling assemblies separating usable spaces into two or more approximate areas with no area greater than 500 square feet (46.5 m~~~~2~~~~). Draftstopping shall be provided parallel to the main framing members in the floor-ceiling assemblies of multiple-family dwellings, motels and hotels above and in line with the tenant separation, when tenant separation walls do not extend to the floor sheathing above.~~

**~~2320.3.1.3 Other occupancies~~**~~. All other buildings, in floor-ceiling assemblies so that horizontal areas do not exceed 1,000 square feet (93 m~~~~2~~~~).~~

**~~2320.3.2 Attics.~~**

**~~2320.3.2.1 Group R1.~~** ~~In the floor-ceiling assemblies above and in line with the tenant separation, when tenant separation walls do not extend to the floor sheathing above.~~

**~~2320.3.2.2 Group R3.~~** ~~None required.~~

**~~Exceptions:~~**

~~1. Where corridor walls provide a tenant separation, draftstopping shall be required above only one of the corridor walls.~~

~~2. Where flat roofs with solid joist construction are used, draftstopping over tenant separation walls is not required.~~

~~3. Where approved sprinklers are provided, draftstopping shall be required for attic spaces over 9000 square feet (836 m~~~~2~~~~) in area.~~

**~~2320.3.2.3 Other buildings.~~** ~~In attic spaces so that horizontal areas do not exceed 3,000 square feet (279 m~~~~2~~~~).~~

**~~Exceptions:~~**

~~1. Where flat roofs with solid joist construction are used, draftstopping over tenant separation walls is not required.~~

~~2. Where approved sprinklers are provided, the area may be tripled.~~

***Section 2321 High-Velocity Hurricane Zones - Anchorage. Modify to read as shown:***

**SECTION 2321**

**HIGH-VELOCITY HURRICANE ZONES —**

**ANCHORAGE**

**2321.1** Anchorage shall be continuous from the foundation to the roof and shall satisfy the uplift requirements of Section 1620.

**2321.2 Joists.**

**2321.2.1** Fire-cuts into a masonry wall shall be anchored to the concrete beam on which they bear.

**2321.2.2** Such anchors shall be spaced not more than 4 feet (1219 mm) apart and shall be placed at opposite ends across the building on the same run of joists.

**2321.3** Joists shall be nailed to bearing plates, where such plates occur, to each other where continuous at a lap and to the studs where such studs are contiguous; and ceiling joists shall be nailed to roof rafters where contiguous.

**2321.4** Every roof rafter and/or roof joist shall be anchored to the beam or studs on which they bear, and roof rafters opposing at a ridge shall be anchored across the ridge as set forth in Section 2321.6.

**2321.5 Anchorage to concrete.**

**2321.5.1** Anchorage designed to resist uplift forces, securing wood to concrete shall be steel straps embedded in the concrete minimum of 4 inches (102 mm) with hooking devices to top steel of tie beam designed to withstand the uplift forces set forth by the design professional. Straps shall be approved under the criteria set by the certification agency. All anchors and related fasteners shall be galvanized.

**2321.5.2** As an alternate to using the straps described in this section, the building official may approve other anchorage submitted by a Florida-registered professional engineer or a Florida-registered architect, proficient in structural design, provided that the information set forth in Section 2321.7(1), (2) and (3) submitted in connection with such anchors and such anchors and the proposed assembly otherwise comply with the requirements of this code.

**2321.6 Anchorage to wood.**

**2321.6.1** Anchorage designed to resist uplift forces, securing wood to wood shall be steel straps nailed to each member and shall be designed to resist uplift forces set forth by the design professional. Straps shall be approved under the criteria set by the certification agency. All anchors and relative nails shall be galvanized.

**2321.6.2** As an alternate to using straps described in this section, the building official may approve other anchorage submitted by a Florida-registered architect or a Florida registered professional engineer, proficient in structural design, provided that the information set forth in Section 2321.7(1), (2) and (3) submitted in connection with such anchors and such anchors and the proposed assembly otherwise comply with the requirements of this code.

**2321.7 Testing of anchoring.** Anchoring required by Sections 2321.5 and 2321.6 shall be tested under the following criteria:

1. Concrete to wood straps: Minimum design uplift load 700 pounds (3114 N), with four 16d nails with upper end bent over truss chord and nailed. Nails shall be clinched. Anchors shall have devices to hook into upper tie beam steel and embedded a minimum of 4 inch (102 mm) in concrete.

2. Wood to wood straps: Minimum design uplift 700 pounds (3114 N) with 4 16d nails in each member.

3. Other anchors: Minimum design uplift 700 pounds (3114 N).

4. The criteria stated in Section 2321.7(1), (2) and (3) above are minimum requirements for product approval for the certification agency. Anchor design and uplift forces shall be submitted to the certification agency for approval together with sufficient documentation and test data to verify performance. A product approval shall be maintained at the job site for the inspector to compare with the uplift force requirements of the design professional as shown on approved plans.

***Section 2322 High-Velocity Hurricane Zones - Sheathing. Modify to read as shown:***

**SECTION 2322**

**HIGH-VELOCITY HURRICANE ZONES —**

**SHEATHING**

**2322.1 Floor sheathing.**

**2322.1.1** **Reserved.**  ~~Floor sheathing, where a part of a required fire-resistive assembly, shall comply with a nationally recognized testing agency (Underwriter's Laboratory, Factory Mutual, etc.).~~

**2322.1.2** **Reserved.**  ~~The finish floor shall be tongue-and-grooved not less than nominal 1-inch (25 mm) lumber laid perpendicular to the joists with end joints on the joists, or a subfloor shall be provided as set forth in Sections 2322.1.3, 2322.1.4, 2322.1.5, and 2322.1.6.~~

**2322.1.3** Square-edged or spaced subflooring may be used only under a finish floor having a strength equal to or greater than 1/2 inch (12.7 mm) tongue-and-groove wood strip flooring; and under finish floors of less strength, a tongue-and-groove or plywood subfloor shall be required.

**2322.1.4** Lumber subflooring shall be not less than 5/8-inch (17 mm) thick when joists are spaced no more than 16 inches (406 mm) on center nor less than 3/4 inch (19 mm) thick when joists are spaced no more than 24 inches (610 mm) on center. End joints shall be on joists, joints shall be staggered and parallel to the joists, and ends at walls and similar places shall be supported by a ribbon or by blocking.

**2322.1.5** Plywood subfloors of C-D grade or underlayment grade bonded to wood joist using adhesives meeting the requirements of ASTM D 3498 shall be applied as indicated in Section 2322.1.6.

**2322.1.6** Plywood subflooring shall be continuous over two or more spans with face grain perpendicular to the supports. The allowable spans shall not exceed those set forth in Table 2322.1.6.

**TABLE 2322.1.6**

**PLYWOOD SUBFLOOR1**

|  |  |
| --- | --- |
| **PANEL SPAN RATING2** | **MAXIMUM PLYWOOD SPAN (IN.)3** |
| 32/16 40/20 48/24 | 164 204 24 |
| For SI: 1 inch = 25.4 mm.  **NOTES:**  1. These values apply for Sheathing C-D and C-C grades only. Spans shall be limited to values shown, and reduced for the possible effects of concentrated loads.  2. Span Ratings shall appear on all panels.  3. Plywood edges shall have approved tongue-and-groove joints or shall be supported with blocking unless 1/4 inch minimum thickness underlay is installed or 1/2 inch of approved cellular or lightweight concrete is installed or unless finish floor is 1inch nominal wood strip. Allowable uniform load based on deflection of 1/360 of span is 100 pounds per square foot.  4. May be inches if nominal 1 inch wood strip finish floor is laid at right angles to joists. | |
|  | |

**2322.1.6.1** Plywood panels shall be nailed to supports with 6d common nails when up to 1/2-inch thick (13 mm), 8d common nails when 19/32 to 3/4 inch (15 to 19 mm) thick and 10d common nails or 8d ring shank when 11/8 inches (29 mm) thick.

**2322.1.6.2** Nail spacing shall be 6 inches (152 mm) o.c. at panel edges and 10 inches (254 mm) o.c. at intermediate supports.

**2322.1.7** **Reserved.**  ~~Any other subfloor panel shall have certification agency approval and shall be installed in accordance with the procedures set forth in the approval.~~

**2322.1.8** Flooring shall be nailed with 8d common nails up to 3/4 inch (19 mm) thick, and 10d common nails or 8d ring shank nails when greater than 3/4 inch (19 mm) thick up to 11/8 inches (29 mm) thick.

**2322.1.8.1** Nails shall be hand driven 8d common nails [0.131 inch (3.3 mm) diameter by 2 1/2 inches (63.5 mm) long with 0.281 inch (7.1 mm) diameter full round head)] or power driven 8d nails of the same dimensions (0.131 inch diameter by 21/2 inches long with 0.281 inch diameter full round head). Nails of a smaller diameter or length may be used only when approved by an architect or professional engineer and only when the spacing is reduced accordingly.

**2322.1.8.2** Nails shall be hand driven 10d common nails [0.148 inch (3.8 mm) diameter by 3 inch (76 mm) long with 0.312 inch (7.9 mm) diameter full round head] or power driven 10d nails of the same dimensions [0.148 inch (3.8m) diameter by 3 inch (76 mm) long with 0.312 inch (7.9 mm) diameter full round head]. Nails of a smaller diameter or length may be used only when approved by an architect or professional engineer and only when the spacing is reduced accordingly.

**2322.1.9** Nail spacing shall be 6 inches (152 mm) on center at panel edges and 10 inches (254 mm) on center at intermediate supports.

**2322.1.10** Flooring shall be nailed with 8d common nails not less than two in each board at each support.

**2322.1.11** Floors for heavy timber buildings shall be sheathed as specified for mill floors, Section 2319.13.

**2322.1.12** Flooring shall not extend closer than 1/2 inch (13 mm) from masonry walls.

**2322.1.13** **Reserved.**  ~~If resilient flooring is to be applied directly to a plywood subfloor without separate underlayment, the plywood shall have a top ply of C-plugged grade or better, and the ply immediately under the face shall be at least C grade unless the face ply is 1/6 inch (4.2 mm) or more in nominal thickness. Plywood shall be continuous over two or more spans with face grain perpendicular to supports. Maximum thickness and maximum joist spacing shall comply with Table 2322.1.13.~~

**TABLE 2322.1.13**

**ALLOWABLE SPAN FOR PLYWOOD COMBINATION SUBFLOOR UNDERLAYMENT1**

**(SINGLE FLOOR PANELS)**

**Reserved**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~SPECIES GROUPS~~** | **~~MAXIMUM PLYWOOD SPAN (IN.)~~~~2, 3~~** | | | |
|  | ~~16~~~~4~~ | ~~5/8~~~~4~~ | ~~24~~ | ~~48~~ |
| ~~1 2,3 4 1, 2 and 3~~ | ~~1/2" 5/8" 3/4"~~ | ~~5/8" 3/4" 7/8"~~ | ~~3/4" 7/8" 1"~~ | ~~1-1/8"~~ |

~~For SI: 1 inch = 25.4 mm.~~

**~~NOTES:~~**

~~1. Applicable underlayment grade, C-C (plugged) and all grades of sanded Exterior type plywood.~~

~~2. Spans shall be limited to values shown, and reduced for the possible effects of concentrated loads.~~

~~3. Allowable uniform load based on deflection of 1/360 of span is 100 pounds per square foot except that total load for 48" on center is 65 pounds per square foot. Plywood edges shall have approved tongue-and-groove joints or shall be supported with blocking unless ¼ inch minimum thickness underlay is installed or ½ inch of approved cellular or lightweight concrete is placed over the subfloor and the sheathing is rated for Exposure 1.~~

~~4. If a wood finish floor is laid perpendicular to the joists or supports, thickness shown for 16 inch and 20 inch spans may be used for 24 inch spans.~~

**2322.1.14** **Reserved.**  ~~Underlayment hardboard shall meet the property requirements for 7/32 inch (5.6 mm) and 1/4 inch (6.4 mm) service hardboard and shall be 0.215 +/-0.005 inch (5.5 +/-0.13 mm) thickness; when supported in subflooring such subflooring shall comply with the requirements of Sections 2322.1.3, 2322.1.4, 2322.1.5, and 2322.1.6.~~

**2322.1.15** **Reserved.**  ~~Particleboard floor underlayment shall conform to Type 1-B-1 of the standard listed in Section 2314.4. Underlayment shall be not less than 1/4 inch (6.4 mm) in thickness and shall be installed in accordance with the installation instructions of the National Particleboard Association.~~

**2322.1.16 Diaphragm boundaries.** All floor sheathing acting as a diaphragm shall be attached to a minimum 2-inch-thick (51 mm) nominal nailer with its depth equal to or one size greater than the intersecting top chord. The nailer shall be connected to the wall to resist the gravity loads from the floor, wind pressure/suction from the exterior wall and the diaphragm forces. The floor sheathing shall be attached to the nailer to resist the wind pressure/suction from the exterior wall and the diaphragm forces.

**2322.2 Roof sheathing.**

**2322.2.1** Wood roof sheathing shall be boards or shall be plywood.

**2322.2.2** Board roof sheathing shall have a net thickness of not less than 3/4 inch (19 mm) when the span is not more than 28 inches (711 mm) or 5/8 inch (17 mm) when the span is not more than 24 inches (610 mm), shall have staggered joints and shall be nailed with 8d common nails not less than two in each 6 inch board nor three in each 8-inch (203 mm) board at each support.

**2322.2.3** Plywood roof sheathing shall be rated for Exposure 1, have a minimum nominal thickness of 19/32 inch (15 mm) and shall be continuous over two or more spans with face grain perpendicular to supports. Roof sheathing panels shall be provided with a minimum of 2 inch by 4 inch (51 mm by 102 mm) edgewise blocking at all horizontal panel joints with edge spacing in accordance with manufacturer's specifications, for a distance at least 4 feet (1219 mm) from each gable end. The allowable spans shall not exceed those set forth in Table 2322.2.3.

**2322.2.4** Plywood panels shall be nailed to supports with 8d ring shank nails.

**TABLE 2322.2.3**

**ALLOWABLE SPAN FOR PLYWOOD ROOF SHEATHING1**

|  |  |  |
| --- | --- | --- |
| **PANEL SPAN RATING2** | **MAXIMUM SPAN IF BLOCK OR OTHER EDGE SUPPORTS (IN.)** | **MAXIMUM SPAN WITHOUT EDGE SUPPORT (IN.)** |
| 32/16 40/20 48/24 | 24 40 48 | 24 32 36 |

For SI: 1 inch = 25.4 mm.

**NOTES:**

1. Values apply to sheathing grade, C-C and C-D panels.

2. Span Rating appears on all C-C and C-D panels.

**2322.2.5** Nail spacing shall be 6 inches (152 mm) on center at panel edges and at intermediate supports. Nail spacing shall be 4 inches (102 mm) on center at gable ends with either 8d ring shank nails or 10d common nails.

**2322.2.5.1** Nails shall be hand driven 8d ring shank or power driven 8d ring shank nails of the following minimum dimensions: (a) 0.113 inch (2.9 mm) nominal shank diameter, (b) ring diameter of 0.012 inch (0.3 mm) over shank diameter, (c) 16 to 20 rings per inch, (d) 0.280 inch (7.1 mm) full round head diameter, (e) 2-inch (60.3 mm) nail length. Nails of a smaller diameter or length may be used only when approved by an architect or professional engineer and only when the spacing is reduced accordingly.

**2322.2.5.2** Nails at gable ends shall be hand driven 8d ring shank or power driven 8d ring shank nails of the following minimum dimensions: (a) 0.113 inch (2.9 mm) nominal shank diameter, (b) ring diameter of 0.012 inch (0.3 mm) over shank diameter, (c) 16 to 20 rings per inch, (d) 0.280 inch (7.1 mm) full round head diameter, (e) 2 3/8 inch (60.3 mm) nail length or as an alternative hand driven 10d common nails [0.148 inch (4 mm) diameter by 3 inches (76 mm) long with 0.312 inch (7.9 mm) diameter full round head] or power driven 10d nails of the same dimensions [0.148 inch (4 mm) diameter by 3 inches (76 mm) long with 0.312-inch-diameter (8 mm) full round head]. Nails of a smaller diameter or length may be used only when approved by an architect or professional engineer and only when the spacing is reduced accordingly. Other products with unique fastening methods may be substituted for these nailing requirements as approved by the building official and verified by testing.

**2322.2.5.3** Other products with unique fastening methods may be substituted for these nailing requirements as approved by the building official and verified by testing.

**2322.2.6** Roof sheathing for heavy timber construction shall comply with Section 2319.13 of this code.

**2322.2.7 Diaphragm boundaries.** All roof sheathing acting as a diaphragm shall be attached to a minimum 2-inch (51 mm) thick nominal member with its depth equal to or one size greater than the intersecting top chord. This shall be achieved with a continuous structural subfascia, fascia or blocking at 4 inches (102 mm) on center with nails as required for the appropriate thickness of sheathing.

**2322.2.8** When existing roofs are reroofed to the point that the existing roofing is removed down to the sheathing, the existing roof sheathing shall be renailed with 8d common nails [0.131 inch (3.3 mm) diameter by 2 1/2 inches (63.5 mm) long with 0.281 inch (7.9 mm) diameter full round head]. Nail spacing shall be 6 inches (152 mm) on center at panel edges, 6 inches (152 mm) on center at intermediate supports and where applicable 4 inches (102 mm) on center over gable ends and subfascia. Existing fasteners may be used to achieve such minimum spacing.

**2322.3 Storm sheathing.** Exterior stud walls shall be sheathed to resist the racking load of wind as set forth in Section 1620 and the concentrated loads that result from hurricane-generated wind-borne debris as set forth in Section 1626 of this code and shall be at a minimum any of the following types:

1. Tightly fitted, diagonally placed boards not less than 5/8 inch (17 mm) thickness, nailed with three 8d common nails to each support for 1 inch by 6 inch (25 mm by 152 mm) boards and four 8d common nails for 1 inch by 8 inches (25 mm by 203 mm) boards.

2. Wall sheathing shall be plywood, or Product Approved structural panel, rated Exposure 1 with a minimum thickness of 19/32 inch (15 mm) and shall be applied to studs spaced not more than 16 inches (406 mm) on center. Wall sheathing shall be continuous over three or more supports and shall be nailed to such supports with 8d common nails. Nail spacing shall not exceed 6 inches (152 mm) on center at panel edges and all intermediate supports. Nail spacing shall be 4 inches (102 mm) on center at corner studs, in all cases.

3. When plywood panel, or Product Approved structural panel, sheathing is used, building paper and diagonal wall bracing can be omitted.

4. When siding such as shingles nailed only to plywood or Product Approved structural panel sheathing, the panel shall be applied with face grain across studs.

**2322.4 Exterior wall cladding.**

**2322.4.1** Plywood, if protected with stucco, may serve for both sheathing and exterior cladding provided:

1. The panel thickness shall be not less than 19/32 inch (15 mm) and Texture 1-11 panels, and the supporting studs shall be spaced not more than 16 inches (406 mm) o.c.

2. All joints shall be backed solidly with 2 inch (51 mm) nominal blocking or studs or the joints shall be lapped horizontally or otherwise watertight.

3. Nailing shall be as set forth in Section 2322.3(2).

**2322.4.2** Where storm sheathing is provided in accordance with Section 2322.3, exterior cladding may be one of the following:

1. Wood siding shall be installed according to its Product Approval.

2. Wood shingles or shakes attached to the storm sheathing, and/or to nailing boards or shingle backer securely attached to the storm sheathing. The minimum thickness of wood shingles or shakes between nailing boards shall be 3/8 inch (9.5 mm).

3. Hardboard of siding quality for exterior use shall be applied in accordance with the Product Approval.

***Section 2323 High-Velocity Hurricane Zones - Furring. Modify to read as shown:***

**SECTION 2323**

**HIGH-VELOCITY HURRICANE ZONES—**

**FURRING**

**RESERVED**

**~~2323.1~~** ~~Where the interior of masonry walls is furred, such furring shall be treated and firestopped as herein required and shall be securely fastened to the masonry with not less than one cut nail in alternate course of block.~~

***Section 2324 High-Velocity Hurricane Zones – Connectors. Modify to read as shown:***

**SECTION 2324**

**HIGH-VELOCITY HURRICANE ZONES—**

**CONNECTORS**

**2324.1** The allowable loads on all types of connectors shall be as set forth in the standards listed in Section 2314.4 and Table 2324.1.

**2324.2** Nails, bolts and other metal connectors that are used in locations exposed to the weather shall be galvanized or otherwise corrosion resistant.

**2324.3** In general, nails shall penetrate the second member a distance equal to the thickness of the member being nailed thereto. There shall be not less than two nails in any connection.

**2324.4** Except for wood-based structural-use panels and other laminated members manufactured under technical control and rigid inspection, gluing shall not be considered an acceptable connector in lieu of the connectors herein specified.

**2324.5** Safe loads and design practice for types of connectors not mentioned or fully covered herein shall be determined by the building official before approval.

**TABLE 2324.1**

**NAIL CONNECTION FOR WOOD MEMBERS**

|  |  |  |
| --- | --- | --- |
| **CONNECTION** | **COMMON NAILS** | **NUMBER OR SPACING** |
| Joists to sill or girder, toe nail | 16d | 2 |
| Bridging to joist, toe nail | 8d | 2 each end |
| 1-inch x 6-inch subfloor or less to each joist, face nail | 8d | 2 |
| Over 1-inch x 6-inch subfloor to each joist, face nail | 8d | 3 + 1 for each size increase |
| 2-inches subfloor to joist or girder, blind and face nail | 16d | 2 |
| Sole plate to joist or blocking, face nail | 16d | 16 inches o.c. |
| Top or sole plate to stud, end nailed | 16d | 2 |
| Stud to sole plate, toe nail | 3d | 3 or 2 16d |
| Doubled studs, face nail | 16d | 24 inches o.c. |
| Doubled top plates, face nail | 16d | 16 inches o.c. |
| Top plates, laps and intersections, face nail | 16d | 2 |
| Continuous header, two pieces | 16 | 16 inches o.c. along each edge |
| Ceiling joists to plate, toe nail | 16d | 2 |
| Continuous header to stud, toe nail | 16d | 3 |
| Ceiling joists, laps over partitions, face nail | 16d | 3 |
| Ceiling joists to parallel rafters, face nail | 16d | 3 |
| Rafter plate, toe nail | 16d | 3 |
| 1-inch x 6-inch sheathing or less, to each bearing, face nail | 8d | 2 |
| Over 1-inch x 6-inch sheathing, to each bearing, face nail | 8d | 3 + 1 for each size increase |
| Built-up corner studs, face nail | 16d | 30 inches o.c. |
| Built-up girders and beams | 20d | 32 inches o.c. At top and bottom and staggered, 2 at ends and at each splice |
| 2-inch planks | 16d | 2 each bearing |

For SI: 1 inch = 25.4 mm.

**NOTE:** In spacing specifications, o.c. means "on-center."

***Section 2325 High-Velocity Hurricane Zones – Wood Supporting Masonry. Modify section 2325 to read as shown:***

**SECTION 2325**

**HIGH-VELOCITY HURRICANE ZONES—**

**WOOD SUPPORTING MASONRY**

**2325.1** Wood shall not support masonry or concrete except as permitted in Section~~s~~ 2325.2 ~~and 2325.3~~.

**2325.2** Wood foundation piles may be used to support concrete or masonry.

**2325.3** Reserved**.**  ~~Plywood decking and approved wood panels, wood joists and wood studs supporting such wood joists may be used to support reinforced concrete slabs, concrete-base tile and terrazzo floors and lightweight concrete toppings as follows:~~

~~1. There shall be an approved moisture vapor barrier between the concrete or other cementitious materials and the wood.~~

~~2. Wood members supporting concrete shall be preservative treated in compliance with AWPA Use Category Systems Standard U1, Commodity Specification A Use Category 4B set forth in Sections 2314.4 and 2326.~~

~~3. Approved wood-based structural-use panel decking shall be rated for Exposure 1.~~

~~4. Wood rafters may support concrete roof tile.~~

***Section 2326 High-Velocity Hurricane Zones – Protection Of Wood. Modify section 2326 to read as shown:***

**SECTION 2326**

**HIGH-VELOCITY HURRICANE ZONES —**

**PROTECTION OF WOOD**

**2326.1** Reserved. ~~Wood piles shall be treated with preservatives as set forth in Section 1823.1.2.~~

**2326.2** Reserved.  ~~Preservative treated or durable species wood.~~

**~~2326.2.1~~** ~~All wood used in areas of building or structures where the climatic condition is conducive to deterioration which would affect the structural safety shall be treated in an approved method with an approved preservative or shall be of an approved durable species.~~

**~~2326.2.2~~** ~~All wood in contact with or embedded in the ground that supports of permanent structures shall be approved pressure-treated wood suitable for ground contact use.~~

**~~Exceptions:~~**

~~1. Naturally durable wood or pressure-treated wood may be used in contact with the ground for support of structures other than buildings and walking surfaces.~~

~~2. Untreated wood may be used for supports where entirely below water level and continuously submerged in fresh water.~~

**~~2326.2.3~~** ~~Sleepers and sills on concrete slabs in contact with the ground, wood joists and the underside of wood structural floors without joists less than 18 inches (457 mm) above ground; or wood girders less than 12 inches (305 mm) from exposed ground within the crawl space under buildings, shall be treated in an approved method with an approved preservative, or shall be of an approved durable species.~~

**~~2326.2.4~~** ~~All wood not separated from and/or in direct contact with concrete masonry, including sills, sleepers, plates, posts, columns, beams, girders and furring; shall be treated in an approved method with and approved preservative, or shall be of an approved durable species.~~

**~~2326.2.5~~** ~~The expression "pressure treated wood" refers to wood meeting the retention, penetration and other requirements applicable to the species, product, treatment and conditions of use in the approved standards of the American Wood Preservers Association (AWPA). Quality Control Program for Softwood Lumber, Timber and Plywood Pressure Treated with Water-borne Preservatives for Ground Contact Use in Residential and Light Commercial Foundations for the American Wood Preservers Bureau.~~

**~~2326.2.6~~** ~~The expression "durable wood" refers to the heartwood of the following species with the exception that an occasional piece with corner sapwood may be included if 90 percent or more of the width of each side on which it occurs is heartwood:~~

~~Decay resistant: Redwood, Cedars, Black Locust.~~

~~Termite resistant: Redwood, Bald and Eastern Red Cedar.~~

**~~2326.2.7~~** ~~Where durable species of wood are used as structural members in buildings and structures, the stress grade shall be not less than that required in Section 2317.~~

**~~2326.2.8~~** ~~When wood pressure treated with a waterborne preservative is used in enclosed locations where drying in service cannot readily occur, such wood shall have a moisture content of 19 percent or less before being covered with insulation, interior wall finish, floor covering or other material.~~

**~~2326.2.9~~** ~~All wood framing less than 8 inches (203 mm) from exposed earth in exterior walls that rest on concrete or masonry foundations shall be approved naturally durable species or pressure treated wood.~~

**~~2326.2.10~~** ~~All posts, poles and columns embedded in concrete which is in contact with ground and supporting permanent structures shall be approved pressure treated wood suitable for ground contact use except naturally durable wood may be used for posts, poles and columns embedded in concrete for structures other than buildings and walking surfaces or in structures where wood is above ground level and not exposed to the weather.~~

**~~2326.2.11~~** ~~For conditions not specifically covered, compliance with American Forest & Paper Product Association Wood Construction Data #6 "Design of Wood Frame Structures for Permanence" shall be deemed as compliance with this code.~~

**2326.3 Ventilation.** Reserved.

**~~2326.3.1 Ventilation of crawl spaces.~~** ~~Crawl spaces under buildings without basements shall be ventilated by approved mechanical means or by openings in foundation walls. Ventilation openings shall be covered with a corrosion-resistant wire mesh with openings not greater than 1/16 inch (1.6 mm).~~

**~~2326.3.1.1~~** ~~Where practicable, ventilating openings shall be arranged on three sides.~~

**~~2326.3.1.2~~** ~~The minimum total area of ventilating openings shall be 2 square feet (0.19 m2) for each 15 linear feet (4.6 m) or a fraction thereof of exterior wall. Such opening need not be placed in the front of the building. Where mechanical ventilation is used, the ventilation rate shall be at least six air changes per hour.~~

**~~2326.3.2 Ventilation of attic spaces.~~** ~~Attic space between ceiling joists and roof rafters shall be effectively cross-ventilated by approved mechanical means or with vent openings. The ratio of total net free ventilating area to the area of the ceiling shall be not less than 1/150.~~

**~~Exception:~~** ~~The venting ratio may be reduced to 1/300 where at least 50 percent of the installed ventilating area is provided by a ventilation system located in the upper portion of the space to be ventilated [within 18 inches (457 mm) of ridge]. The balance of the required ventilation shall be provided by eave or cornice vents.~~

**~~2326.3.2.1~~** ~~Where practical, ventilating openings shall be arranged on three sides.~~

**~~2326.3.2.2~~** ~~Where mechanical ventilation is used, the ventilation rate shall be at least six air changes per hour.~~

**~~2326.3.2.3~~** ~~All openings into the attic space of any habitable building shall be covered with screening, hardware cloth or equivalent to prevent the entry of birds, squirrels, rodents, etc. The openings therein shall not exceed 1/8 inch (3.2 mm).~~

**~~2326.3.2.4~~** ~~For existing structures that were built before 1992 without soffit ventilation, and where in the opinion of the building official the soffit ventilation would be impossible or impractical to install, the building official may determine the extent to which the existing structure shall be made to conform to the requirements of this section.~~

**2326.4 Debris.**

**2326.4.1** Reserved.  ~~Before any new building is erected, all stumps and roots shall be removed from the soil to a depth of at least 12 inches (305 mm) below the surface of the ground in the area to be occupied by the building.~~

**2326.4.2** In buildings or portions thereof having wood first-floor systems, all wood forms which have been used in placing concrete, if within the ground or less than 18 inches (457 mm) above the ground, shall be removed before the building is occupied or used for any purpose.

**2326.4.3** Loose or casual wood shall not be stored in direct contact with the ground under any building, and this space must be thoroughly cleaned of all wood and debris.

**2326.5 Termite protection.** Reserved**.**  ~~All buildings shall have a pre-construction treatment protection against subterranean termites. The rules and laws as established by the Florida Department of Agriculture and Consumer Services shall be deemed as approved with respect to pre-construction soil treatment for protection against subterranean termites. 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."~~

**2326.6 Existing buildings.** Reserved. ~~Whenever the building official has knowledge of the existence of termites in any building or structure, he shall notify the owner in writing and direct that necessary measures be taken for the extermination of the termites within a reasonable length of time, not to exceed 60 days.~~

**2326.6.1** The building official shall inspect existing buildings having wood-stud exterior walls for which application for a permit for exterior wall coverings is made and shall have the authority to order the uncovering of structural elements for inspection and to require necessary repairs as a part of such approval for a permit, or may order demolition.

***Section 2327 High-Velocity Hurricane Zones – Fire Retardant Wood. Modify section 2327 to read as shown:***

**SECTION 2327**

**HIGH-VELOCITY HURRICANE ZONES—**

**FIRE RETARDANT WOOD**

**RESERVED**

**~~2327.1~~** ~~Fire-retardant-treated wood shall be defined as any wood product which, when impregnated with chemicals by a pressure process, or other means during manufacture, shall have when tested in accordance with ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, a flame spread index of 25 or less and show no evidence of significant progressive combustion when the test is continued for an additional 20-minute period. In addition, the flame front shall not progress more than 10 feet (3 m) beyond the centerline of the burner at any time during the test.~~

**~~2327.2~~** ~~The allowable unit stresses for fire-retardant-treated wood including fastener values, shall be developed from an approved method which considers the effects of anticipated temperatures and humidity to which the fire-retardant wood will be subjected, the type of treatment and the redrying process.~~

**~~2327.3~~** ~~All fire-retardant-treated wood shall bear an identification mark showing the flame spread classification thereof issued by an approved agency having a reexamination service which maintains a continued supervision and inspection over method of drying. If intended for exterior use, the wood shall be further identified to indicate suitability for exposure to the weather, as defined in Section 2327.5.~~

**~~2327.4~~** ~~Where fire-retardant-treated wood is exposed to the weather, it shall be further identified to indicate that there is no increase in the listed flamespread classification as defined in Section 2322.1 when subjected to ASTM D 2898, Standard Method for Accelerated Weathering of Fire Retardant Treated Wood for Fire Testing.~~

**~~2327.5~~** ~~Where experience has demonstrated a specific need for use of material of low hygroscopicity, fire-retardant-treated wood to be subjected to high humidity conditions shall be identified as Type A to indicate the treated wood has a moisture content of not over 28 percent when tested in accordance with ASTM D 3201 procedures at 92-percent relative humidity.~~

**~~2327.6~~** ~~Fire-retardant-treated wood shall be dried to a moisture content of 19 percent or less for lumber and 15 percent or less for plywood before use. The identification mark shall show the method of drying after treatment. When fire-retardant-treated wood is air dried after treatment (ADAT) it shall be protected so that no leaching of chemicals will occur. Fire-retardant-treated wood kiln dried after treatment (KDAT) shall not be exposed to a dry bulb temperature exceeding 160°F (71°C). If required for curing, exterior fire-retardant-treated wood can be exposed to elevated temperatures when the moisture content of the wood does not exceed 19 percent for lumber or 15 percent for wood structural panels. The curing time shall not exceed 48 hours and the temperature shall not exceed 210°F (99°C).~~

***Section 2328 High-Velocity Hurricane Zones – Wood Fences. Modify section 2328 to read as shown:***

**SECTION 2328**

**HIGH-VELOCITY HURRICANE ZONE—WOOD FENCES**

**2328.1** Wood fences, so located on a property that by zoning regulations they cannot be used as a wall of a building, shall be constructed to meet the minimum specifications in Sections 2328.2 and 2328.3.

**2328.2** Fences not exceeding 6 feet (1829 mm) in height, shall be constructed to meet the following minimum requirements: from nominal 4-inch by 4-inch by 8-feet-long (102 mm by 102 mm by 2438 mm) posts No. 2 grade or better spaced 4 feet (1219 mm) on center, and embedded 2 feet (610 mm) into a concrete footing 10 inches (254 mm) in diameter and 2 feet (610 mm) deep.

**2328.3** Fences not exceeding 5 feet (1524 mm) or 4 feet (1219 mm) in height shall be constructed as provided in Section 2328.2, except that the spacing of posts may be increased to 5 feet (1524 mm) and 6 feet (1829 mm) on center for these heights, respectively.

***Section 2329 High-Velocity Hurricane Zones – Fire-Retardant-Treated Shakes and Shingles. Modify section 2329 to read as shown:***

**SECTION 2329**

**HIGH-VELOCITY HURRICANE ZONES—**

**FIRE-RETARDANT-TREATED SHAKES AND SHINGLES**

**RESERVED**

**~~2329.1~~** ~~Treated shakes and shingles, when impregnated with chemicals by the full-cell vacuum pressure process, shall be considered fire retardant (classified) roof coverings when tested in accordance with ASTM E 108, Fire Tests of Roof Coverings, Including the rain test, ASTM D 2898, Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing . The fire-resistance tests shall include the intermittent flame test, spread of flame test, burning brand test and flying brand test. In addition, at the conclusion of the rain test, test panels shall be subjected to intermittent flame test, burning brand test and flying brand test.~~

**~~2329.2~~** ~~Each bundle of fire-retardant-treated shakes and shingles shall be identified with labels indicating the manufacturer, the classification of the material (Class B) and the quality control agency.~~

***Section 2330 High-Velocity Hurricane Zones – Wood Blocking. Modify section 2330 to read as shown:***

**SECTION 2330**

**HIGH-VELOCITY HURRICANE ZONES—WOOD BLOCKING**

**2330.1 General.**

**2330.1.1** Blocking is defined as wood pieces attached to the roof deck or to each other for the purpose of securing roof membrane or accessories.

**2330.1.2** Wood blocking attachment for buildings greater than 40 feet (12.2 m) in height must be designed by a registered architect or professional engineer.

**2330.1.3** Wood blocking attachment for lightweight insulating concrete, gypsum concrete, cementitious wood fiber and cellular concrete decks shall be designed by a registered architect or professional engineer. The decks themselves shall not be used as a wood blocking attachment substrate.

**2330.1.4** Wood blocking shall not be less than nominal 2 inches by 6 inches (51 mm by mm). The maximum unsupported overhang shall be 2 inches (51 mm). When the maximum overhang is employed, a nominal 2-inch by 6-inch (51 mm by mm) blocking shall be installed.

**2330.1.5** In recover applications, wood blocking may be reduced to nominal 1 inch (25 mm), providing the attachment is secured in compliance with this code.

**2330.1.6** Sound wood blocking may be reused in a recover or reroof application, providing the attachment is secured in compliance with the requirements of this code.

**2330.1.7** A fastener shall be placed within 3 inches (761 mm) of the end of each section of wood blocking and a 1/4-inch (6 mm) gap shall be left between each section of wood blocking. No piece of wood shall have less than two fasteners.

**2330.1.8** Fasteners other than nails shall be predrilled prior to attachment and countersunk to be flush with the surface of the wood blocking.

**2330.1.9** Wood shall be protected according to Section 2326.

**2330.1.10** Powder actuated fasteners shall not be used in wood blocking attachment.

**2330.2 Attachment to masonry block and concrete.**

**2330.2.1** Prior to the installation of wood blocking to standard weight masonry block, the two top courses shall be solidly filled with concrete or a tie beam shall be provided as required by this code.

**2330.2.2** The fastener's average withdrawal resistance per lineal foot shall be not less than 250 pounds per foot (3649 N/m) after the application of a 4:1 safety factor.

**2330.2.3** The pullover value of the proposed fastener though the wood blocking shall be not less than 125 percent of the design load of the proposed fastener. If less, a larger bearing washer shall be added to the fastener assembly to meet this requirement. Wood blocking thickness shall be not less than 1 ½ inch (38 mm) if a bearing washer is required.

**Chapter 24 – Glass and Glazing**

***Section 2401 – General. Change Section 2401.1 to read as shown:***

**2401.1 Scope.** The provisions of this chapter shall govern the materials, design, construction and quality of glass, light-transmitting ceramic and light-transmitting plastic panels for exterior and interior use in both vertical and sloped applications in buildings and structures.

**Exception:** Buildings and structures located within the high-velocity hurricane zone shall also comply with the provisions of Sections 2410 through 2415, excluding 2405.5.

***Section 2403 – General Requirements for Glass. Change Section 2403.1 to read as shown:***

**2403.1 Identification.** Each pane shall bear the manufacturer’s mark designating the type and thickness of the glass or glazing material. With the exception of tempered glazing materials or laminated materials, ~~T~~the identification shall not be omitted unless approved and an affidavit is furnished by the glazing contractor certifying that each light is glazed in accordance with approved construction documents that comply with the provisions of this chapter. Safety glazing shall be identified in accordance with Section 2406.2. Each pane of tempered glass, except tempered spandrel glass, shall be permanently identified by the manufacturer and each pane of laminated glass shall be permanently identified with the laminator, overall glass thickness and trade name of interlayer. The identification mark shall be acid etched, sand blasted, ceramic fired, laser etched, embossed or of a type that, once applied, cannot be removed without being destroyed. Tempered or laminated spandrel glass shall be provided with a removable paper marking by the manufacturer.

***Section 2404 – Wind, Snow, Seismic and Dead Loads on Glass. Change Section 2404.1 to read as shown:***

**2404.1 Vertical glass.** Glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads due to ultimate design wind speed *Vult* in Section 1609 (HVHZ shall follow Section 1620) for components and cladding. Glass in glazed curtain walls, glazed storefronts and glazed partitions shall meet the seismic requirements of ASCE 7, Section 13.5.9. The load resistance of glass under uniform load shall be determined in accordance with ASTM E 1300.

The design of vertical glazing shall be based on the following equation:

*0.6Fgw* ≤ *Fga* **(Equation 24-1)**

where:

*Fgw* = Wind load on the glass due to ultimate design wind speed *Vult,* computed in accordance with Section 1609.

*Fga* = Short duration load on the glass as determined in accordance with ASTM E 1300.

***Section 2404 – Wind, Snow, Seismic and Dead Loads on Glass. Change Section 2404.2 to read as shown:***

**2404.2 Sloped glass.** Glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunrooms, sloped roofs and other exterior applications shall be designed to resist the most critical of the following combinations of loads.

*Fg = 0.6Wo – D* **(Equation 24-2)**

*Fg = 0.6Wi + D +* 0.5 *S* **(Equation 24-3)**

*Fg =* ~~0.5~~ *0.3Wi + D + S* **(Equation 24-4)**

where:

*D* = Glass dead load psf (kN/m2).

For glass sloped 30 degrees (0.52 rad) or less from horizontal, = 13 *tg* (For SI: 0.0245 *tg*).

For glass sloped more than 30 degrees (0.52 rad) from horizontal, = 13 *tg* cos  (For SI: 0.0245 *tg* cos ).

*Fg* = Total load, psf (kN/m2) on glass.

*S* = Snow load, psf (kN/m2) as determined in Section 1608.

*tg* = Total glass thickness, inches (mm) of glass panes and plies.

*Wi* = Inward wind force, psf (kN/m2) due to ultimate design wind speed *Vult* as calculated in Section 1609.

*Wo* = Outward wind force, psf (kN/m2) due to ultimate design wind speed *Vult,* as calculated in Section 1609.

 = Angle of slope from horizontal.

**Exception:** The design pressure rating of unit skylights and tubular daylighting devices shall be ~~designed~~ determined in accordance with Section 2405.5.

The design of sloped glazing shall be based on the following equation:

*Fg* ≤ *Fga* **(Equation 24-5)**

where:

*Fg* = Total load on the glass determined from the load combinations above.

*Fga* = Short duration load resistance of the glass as determined according to ASTM E 1300 for Equations 24-2 and 24-3; or the long duration load resistance of the glass as determined according to ASTM E 1300 for Equation 24-4.

***Section 2404 – Wind, Snow, Seismic and Dead Loads on Glass. Change Sections 2404.3.1 – 2404.3.5 to read as shown:***

**2404.3.1 Vertical wired glass.** Wired glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in [Section 1609](javascript:Next('./icod_ibc_2012_16_sec009.htm');) (HVHZ shall comply with Section 1620) for components and cladding according to the following equation**.**

*0.6Fgw* < 0.5 *Fge* **(Equation 24-6)**

where:

*Fgw* = Is the wind load on the glass due to ultimate design wind speed *Vult,* computed per Section 1609.

*Fge* = Nonfactored load from ASTM E 1300 using a thickness designation for monolithic glass that is not greater than the thickness of wired glass.

**2404.3.2 Sloped wired glass.** Wired glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunspaces, sloped roofs and other exterior applications shall be designed to resist the most critical of the combinations of loads from Section 2404.2.

For Equations 24-2 and 24-3:

*Fg* < 0.5 *Fge* **(Equation 24-7)**

For Equation 24-4:

*Fg* < 0.3 *Fge* **(Equation 24-8)**

where:

*Fg* = Total load on the glass, as determined by Equations 24-2, 24-3 or 24-4.

*Fg*e = Nonfactored load from ASTM E 1300.

**2404.3.3 Vertical patterned glass.**   
Patterned glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in [Section 1609](javascript:Next('./icod_ibc_2012_16_sec009.htm');) (HVHZ shall comply with Section 1620) for components and cladding according to the following equation:

*0.6Fgw* < 1.0 *Fge* **(Equation 24-9)**

where:

*Fgw* = Wind load on the glass due to ultimate design wind speed *Vult* computed per Section 1609 (HVHZ shall comply with Section 1620).

*Fge* = Nonfactored load from ASTM E 1300. The value for patterned glass shall be based on the thinnest part of the glass. Interpolation between nonfactored load charts in ASTM E 1300 shall be permitted.

**2404.3.4 Sloped patterned glass.** Patterned glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunspaces, sloped roofs and other exterior applications shall be designed to resist the most critical of the combinations of loads from Section 2404.2.

For Equations 24-2 and 24-3:

*Fg* < 1.0 *Fge* **(Equation 24-10)**

For Equation 24-4:

*Fg* < 0.6*Fge* **(Equation 24-11)**

where

*Fg* = Total load on the glass, as determined by equations 24-2, 24-3 or 24-4.

*Fge* = Nonfactored load from ASTM E 1300. The value for patterned glass shall be based on the thinnest part of the glass. Interpolation between the nonfactored load charts in ASTM E 1300 shall be permitted.

**2404.3.5 Vertical sandblasted glass.** Sandblasted glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors, and other exterior applications shall be designed to resist the wind loads in [Section 1609](javascript:Next('./icod_ibc_2012_16_sec009.htm');) (HVHZ shall comply with Section 1620)  for components and cladding according to the following equation:

*~~Fg~~0.6Fgw* < 0.5 *Fge* **(Equation 24-12)**

where:

*~~F~~~~g~~Fgw* = ~~Tota~~l Wind load on the glass due to ultimate design wind speed *Vult* computed per Section 1609.

*Fge* = Nonfactored load from ASTM E 1300. The value for sandblasted glass is for moderate levels of sandblasting.

***Section 2404 – Wind, Snow, Seismic and Dead Loads on Glass. Change Section 2404.5. to read as shown:***

**2405.5 Unit skylights and tubular daylighting devices.** Unit skylights and tubular devices shall be tested and labeled as complying with AAMA/WDMA/CSA 101/I.S./A440. The *label* shall state the name of the manufacturer, the *approved* labeling agency, the product designation and the performance grade rating as specified in AAMA/WDMA/CSA 101/I.S.2/A440. If the product manufacturer has chosen to have the performance grade of the skylight rated separately for positive and negative design pressure, then the *label* shall state both performance grade ratings as specified in AAMA/ WDMA/CSA 101/I.S.2/A440 and the skylight shall comply with Section 2405.5.2. If the skylight is not rated separately for positive and negative pressure, then the performance grade rating shown on the *label* shall be the performance grade rating determined in accordance with AAMA/WDMA/ CSA 101/I.S.2/A440 for both positive and negative design pressure and the skylight shall conform to Section 2405.5.1.

**2405.5.1 ~~Unit~~ Skylights rated for the same performance grade for both positive and negative design pressure.** The design of ~~unit~~ skylights shall be based on the following equation:

*Fg* ≤ *PG* **(Equation 24-13)**

where:

*Fg*= Maximum load on the skylight determined from Equations 24-2 through 24-4 in Section 2404.2.

*F* = Maximum load on the skylight determined

*PG*= Performance grade rating of the skylight.

**2405.5.2 ~~Unit~~ Skylights rated for separate performance grades for positive and negative design pressure.** The design of ~~unit~~ skylights rated for performance grade for both positive and negative design pressures shall be based on the following equations:

*Fgi* ≤ *PGPo****s*****(Equation 24-14)**

*Fgo* ≤ *PGNe****g***

**(Equation 24-15)**

where:

*PGPos* = Performance grade rating of the skylight under positive design pressure;

*PGNeg* = Performance grade rating of the skylight under negative design pressure; and

*Fgi* and *Fgo* are determined in accordance with the following:

For *0.6 Wo* ≥ *D*,

where:

*Wo* = Outward wind force, psf (kN/m2) due to ultimate design wind speed *Vult,* as calculated in Section 1609.

*D* = The dead weight of the glazing, psf (kN/m2) as determined in Section 2404.2 for glass, or by the weight of the plastic, psf (kN/m2) for plastic glazing.

*Fgi* = Maximum load on the skylight determined from Equations 24-3 and 24-4 in Section 2404.2.

*Fgo* = Maximum load on the skylight determined from Equation 24-2.

For *0.6Wo* < *D*,

where:

*Wo*= Is the outward wind force, psf (kN/m2 ) due to ultimate design wind speed *Vult* as calculated in Section 1609.

*D*= The dead weight of the glazing, psf (kN/m2) as determined in Section 2404.2 for glass, or by the weight of the plastic for plastic glazing.

*Fgi*= Maximum load on the skylight determined from Equations 24-2 through 24-4 in Section 2404.2.

*Fgo* = 0.

***Section 2407 – Wind, Snow, Seismic and Dead Loads on Glass. Change Section 2407.1.4.2 to read as shown:***

**2407.1.4.2 Glass supporting top rail.** When the top rail is supported by glass, the assembly shall be tested according to the impact requirements of Section 1609.1.2 (HVHZ shall comply with Section 1618.4.6.4). The top rail shall remain in place after impact.

***Section 2410 High-Velocity Hurricane Zones – General. Add section 2410 to read as shown:***

**SECTION 2410**

**HIGH-VELOCITY HURRICANE ZONES —**

**GENERAL**

**2410.1** Exterior wall cladding, surfacing and glazing, where provided, shall be as set forth in Sections 2410 through 2415.

**2410.2** Exterior wall cladding, surfacing and glazing shall be designed and constructed to sufficiently resist the full pressurization from the wind loads prescribed in Chapter 16 (High-Velocity Hurricane Zones) and the concentrated loads that result from hurricane-generated wind-borne debris.

1. Exterior wall cladding, surfacing and glazing, within the lowest 30 feet (9.1 m) of the exterior building walls shall be of sufficient strength to resist large missile impacts as outlined in Chapter 16 (High-Velocity Hurricane Zones).

2. Exterior wall cladding, surfacing and glazing located above the lowest 30 feet (9.1 mm) of the exterior building walls shall be of sufficient strength to resist small missile impacts as outlined in Chapter 16 (High-Velocity Hurricane Zones).

**Exception:** Exterior wall cladding, surfacing and glazing when protected by fixed, operable or portable shutters or screens which have product approval to resist full pressurization from wind loads as well as large and small missile impacts as outlined in the high-velocity hurricane provisions of Chapter 16, without deforming to the point where the substrate being protected is compromised.

**2410.3 Workmanship.** Reserved**.**  ~~Cladding and glazing shall be in conformance with the tolerances, quality and methods of construction as set forth in the standard referenced in Chapter 35.~~

**2410.4** All exterior wall cladding, surfacing, garage doors, skylights, operative and inoperative windows shall have Product Approval.

***Section 2411 High-Velocity Hurricane Zones – Windows, Doors, Glass and Glazing. Add section 2411 to read as shown:***

**SECTION 2411**

**HIGH-VELOCITY HURRICANE ZONES—**

**WINDOWS, DOORS, GLASS AND GLAZING**

**2411.1 General.**

**2411.1.1** Windows, doors, glass and glazing shall be as set forth in this section.

**2411.1.2** Glass shall comply with ASTM C 1036 requirements for flat glass Type I and II and GSA DD-G-451c *Standard for Glass, Flat and Corrugated, for Glazing Mirrors and Other Uses*.

**2411.1.3** Reserved. ~~Tempered glass shall comply with 16 CFR 1201.~~

**2411.1.4** Reserved. ~~Transparent and obscure safety glazing shall conform to the Performance Specifications and Methods of Test for Transparent Safety Glazing Materials Used in Buildings, ANSI Z 97.1.~~

**2411.1.5** Heat-strengthened and ceramic-coated spandrel glass shall comply with ASTM C 1048.

**2411.1.6** Reserved. ~~Wired glass shall comply with ANSI Z 97.I and shall only be used in fire doors and in glazed panels where safety glazing is not required.~~

**2411.1.7** Installed glass shall not be less than Single-Strength B quality unless otherwise approved by the building official, and where edges are exposed they shall be seamed or ground.

**2411.1.8** Where a light of glass is of such height above grade that the top 50 percent or more is in a zone of greater wind load, the area of the entire light shall be limited as for the greater height above grade.

**2411.1.9** Replacement of any glazing or part thereof shall be designed and constructed in accordance with Chapter 34, Existing Buildings Provisions for High-Velocity Hurricane Zones.

**2411.1.10** Fixed glazing used as an exterior component shall require product approval. Comparative analysis in compliance with 2411.3.2.4 by a Florida-registered engineer or architect may be accepted when the actual pressure and geometry conditions differ from the conditions shown in the approval.

**2411.1.11** Exterior lite of glass in an insulated glass unit shall be safety glazed.

**Exceptions:**

1. Large missile impact-resistant glazed assemblies.

2. Nonmissile impact units protected with shutters.

**2411.2 Fixed glass in exterior walls.**

**2411.2.1** Limits of size of glass.

**2411.2.1.1** The minimum thickness of annealed float glazing materials used in exterior walls shall be determined and shall not be less than as set forth in ASTM E 1300.

**2411.2.1.2** For glazing materials other than annealed float use the glazing material resistance factors used in ASTM E 1300.

**2411.2.1.3** Corrugated glass and other special glass shall be limited to spans determined by analysis and test to resist the loads set forth in Chapter 16 (High Wind Zones) based on fiber stresses not exceeding 4000 psi (27.58 MPa).

**2411.2.1.4** Glass block shall have product approval.

**2411.3 Doors and operative windows in exterior walls.**

**2411.3.1 Design and approval.**

**2411.3.1.1** The design and approval of sliding doors, swinging doors and operative windows in exterior walls, including the supporting members shall be based on the proposed use-height above grade in accordance with Chapter 16 (High-Velocity Hurricane Zones).

**2411.3.1.2** Maximum glass sizes shall comply with ASTM E 1300.

**2411.3.1.3** Reserved. ~~Glazing in sliding and in swinging doors shall be safety-glazing complying with 16 CFR 1201, Safety Standard for architectural glazing Materials, Consumer Product Safety Commission, and as described in Sections 2411.3.1.3.1 through 2411.3.1.3.5.~~

**~~2411.3.1.3.1~~** ~~Doors containing glazing material not greater than 9 square feet (0.84 m2) in surface area shall be classified as Category I glazing products.~~

**~~2411.3.1.3.2~~** ~~Doors, bath and shower enclosures, and sliding glass doors containing glazing material greater than 9 square feet (0.84 m2) in surface area shall be classified as Category II glazing products.~~

**~~2411.3.1.3.3~~** ~~Category I glazing products shall be capable of withstanding a 150 foot-pound (102 N-m) impact test.~~

**~~2411.3.1.3.4~~** ~~Category II glazing products shall be capable of withstanding a 400 foot-pound (542 N-m) impact test.~~

**~~2411.3.1.3.5~~** ~~Doors shall be designed to be readily operative without contact with the glass.~~

**2411.3.1.4** The architect or professional engineer of record shall be required to specify the design wind pressure, determined in accordance with Chapter 16 (High- Velocity Hurricane Zones), for all garage doors, skylights operative windows and fixed glazing. The design wind pressure for each component of the exterior building surface, shall be incorporated into the building design drawing so as to allow the respective manufacturer to size the prefabricated assembly for the proper wind pressures.

**2411.3.1.5** Exterior garage doors shall be designed and constructed to actively or passively lock in the closed position when subjected to a uniform lateral pressure in excess of 50 percent of the design wind pressure as prescribed in Chapter 16 (High-Velocity Hurricane Zones).

**2411.3.1.6** The architect or professional engineer of record shall be required to detail on the drawings submitted for permit, rough opening dimensions, supporting framework, method of attachment and waterproofing procedures for all garage doors, passage doors, skylights, operative and inoperative windows in exterior walls. Said framework and method of attachment shall be designed and constructed so as to sufficiently resist the design wind pressures as outlined in Chapter 16 (High-Velocity Hurricane Zones).

**Exception:** When detailed engineered shop drawings, along with the notices of product approval, produced by the manufacturer's specialty engineer and approved by the architect or professional engineer of record, are admitted at the time of permit application, which completely identifies rough openings, supporting framework, method of attachment and waterproofing procedures are prepared and bear the signature and seal of a professional engineer.

**2411.3.2 Tests.**

**2411.3.2.1** Operative window and door assemblies shall be tested in accordance with the requirements of this section, TAS 202 and provisions from ANSI/AAMA/MWWDA 101/IS 2, and the forced entry prevention requirements of the American Architectural Manufacturers Association (AAMA) Sections 1302.5 and 1303.5.

**Exceptions:**

1. Door assemblies installed in nonhabitable areas where the door assembly and area are designed to accept water infiltration, need not be tested for water infiltration.

2. Door assemblies installed where the overhang (OH) ratio is equal to or more than 1 need not be tested for water infiltration. The overhang ratio shall be calculated by the following equation:

OH ratio = OH Length/OH Height

where:

OH length = The horizontal measure of how far an overhang over a door projects out from door's surface.

OH height = The vertical measure of the distance from the door's sill to the bottom of the overhang over a door.

3. Pass-through windows for serving from a single-family kitchen, where protected by a roof overhang of 5 feet (1.5 m) or more shall be exempted from the requirements of the water infiltration test.

**2411.3.2.1.1** Glazed curtain wall, window wall and storefront systems shall be tested in accordance with the requirements of this Section and the laboratory test requirements of the American Architectural Manufacturers Association (AAMA) Standard 501, following test load sequence and test load duration in TAS 202.

**2411.3.2.2** Such assemblies with permanent muntin bars shall be tested with muntin bars in place.

**2411.3.2.3** Such assemblies shall be installed in accordance with the conditions of test and approval.

**2411.3.2.4** Structural wind load design pressures for window and door units other than the size tested in accordance with Section 2411.3.2.1 shall be permitted to be different than the design value of the tested unit provided such different pressures are determined by accepted engineering analysis or validated by an additional test of the window or door unit to the different design pressure in accordance with section 2411.3.2.1. All components of the alternate size unit shall be the same as the tested or labeled unit.

i. Operable windows and glass doors rated in this manner shall comply with the following:

1. The frame area of the alternate size unit shall not exceed the frame area of the tested approved unit.

2. Shall vary from the tested approved unit only in width, height or load requirements.

3. Shall not exceed 100 percent of the proportional deflection for fiber stress of the intermediate members of the approved unit.

4. Shall not exceed 100 percent of the concentrated load at the juncture of the intermediate members and the frame of the approved unit.

5. Shall not exceed the air and water infiltration resistance of the tested approved unit.

6. Shall not exceed the maximum cyclic pressure of the tested approved unit when tested per TAS 201 and TAS 203.

ii. Non-operable windows and glass doors rated in this manner shall comply with the following:

1. The frame area of the alternate size unit shall not exceed the frame area of the tested approved unit.

2. Shall vary from the tested approved unit only in width, height or load requirements.

3. The maximum uniform load distribution (ULD) of any side shall be equal to the uniform load carried by the side divided by the length of the side.

4. The ULD of any member shall not exceed the ULD of the corresponding member of the tested approved unit.

5. The ULD of each member shall be calculated in accordance with standard engineering analysis.

6. Shall not exceed the air and water infiltration resistance of the tested approved unit.

7. Shall not exceed the maximum cyclic pressure of the tested approved unit when tested per TAS 201 and 203.

**2411.3.2.5** Reserved. ~~Comparative analysis of operative windows and glazed doors may be d the proposed unit complies with the following:~~

~~1. Shall always be compared with a tested and currently approved unit.~~

~~2. Varies only in width, height and/or load requirements.~~

~~3. Shall not exceed 100 percent of the proportional deflection for fiber stress~~

~~of the intermediate members of the approved unit.~~

~~4. Shall conform as to extruded members, reinforcement and in all other ways with the tested approved unit.~~

~~5. Shall not exceed 100 percent of the concentrated load at the juncture of the intermediate members and the frame of the approved unit.~~

~~6. Shall not permit more air and water infiltration than the approved unit based on the height above grade.~~

~~7. Compared unit shall not exceed the maximum cyclic pressure when tested per TAS 203.~~

**2411.3.2.6** Reserved. ~~Comparative analysis of fixed glass windows may be made provided the proposed unit complies with the following:~~

~~1. Shall always be compared with a tested and currently approved unit.~~

~~2. Varies only in width, height and/or load requirements.~~

~~3. The design is identical in all respects. e.g., extrusions, glazing system, joinery, fasteners, etc.~~

~~4. Shall not permit more air and water infiltration than the approved unit based on height above grade.~~

~~5. The maximum uniform load distribution (ULD) of any side is equal to the uniform load carried by the side divided by the length of the side.~~

~~6. The ULD of any member must not exceed the ULD of the corresponding member of the tested window.~~

~~7. The uniform load distribution on each member shall be calculated in accordance to Section 2, Engineering Design Rules, of the AAMA 103.3 Procedural Guide .~~

~~8. Compared unit shall not exceed the maximum cyclic pressure when tested per TAS 203.~~

**2411.3.3 Construction details.** Construction details for fixed glass shall comply with the requirements of this paragraph except that structural glazing as defined in Section 202 need not comply with this section, but shall comply with Section 2415.

**2411.3.3.1** Each light of fixed glass more than 3 feet (914 mm) in width shall have two approved setting blocks or approved suspension clamps. Setting blocks shall be Neoprene 70-90 Shore A durometer hardness or approved equal.

**2411.3.3.2** Fixed glass lights shall be set in corrosion-resistant metal frames and shall comply with applicable requirements of Chapter 16 (High-Velocity Hurricane Zones) for wind loads, allowable stresses and load tests. Fixed glass lights may be set in wood, metal or concrete frames as permitted for the types of construction by Chapter 3 through Chapter 6.

**2411.3.3.3** Wood shall have been preservative treated or shall be of a durable species as defined in Section 2326.2.

**2411.3.3.4** Attachment shall be as set forth in Chapter 16 (High-Velocity Hurricane Zones) and shall be corrosion-resistant.

**2411.3.3.5** Glass in fixed lights shall be securely and continuously supported at the perimeter of each sheet unless the design is based on one or more unsupported edges. Supporting members such as division bars and mullions shall be designed by rational analysis to support the wind pressures set forth in Chapter 16 (High-Velocity Hurricane Zones). Supporting bars shall be attached at the ends to resist the loads set forth in Chapter 16 (High-Velocity Hurricane Zones).

**2411.3.3.6** The depth of the glazing rabbet and depth of engagement in the rabbet, for fixed glass, shall be based on consideration of the dimensional reduction from deflection and the dimensional changes caused by temperature.

**2411.3.3.7** Exterior lite of glass in an insulated glass unit shall be safety glazed.

**Exceptions:**

1. Large missile impact-resistant glazed assemblies.

2. Nonmissile impact units protected with shutters**.**

**2411.3.4** Gaskets used in glazing systems shall comply with the following standards as applicable:

1. ASTM C 864, Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.

2. ASTM C 509, Elastomeric Cellular Preformed Gaskets and Sealing Material.

3. ASTM C 1115, Dense Elastomeric Silicone Rubber Gaskets and Accessories.

4. ASTM E 2203, Dense Thermoplastic Elastomers Used for Compression Seals, Gaskets, Setting Blocks, Spacers and Accessories.

**2411.4 Glazed panel safeguards.** Reserved. ~~Glazed panels shall be protected in accordance with this section.~~

**~~2411.4.1~~** ~~Where there is a drop of 4 feet (1219 mm) or more on the far side of fixed glazed panel 24 inches (610 mm) or more in width, the bottom of which is less than 36 inches (914 mm) above the near side walking surface, safeguards as set forth in Section 1618.4 shall be provided.~~

**~~2411.4.2~~** ~~Where there is a drop of less than 4 feet (1219 mm) on opposite sides of an operable or nonoperable glazed panel 24 inches (610 mm) or more in width and 9 square feet (0.84 m2) or more in area, one of the following safeguards shall be provides where persons might walk into or through such glazing:~~

~~1. Safety glazing conforming to federal standard 16 CFR 1201.~~

~~2. An opaque bulkhead not less than 18 inches (457 mm) higher than the upper level.~~

~~3. A single horizontal bar of handrail strength requirements not less than 11/2 inches (38 mm) in width measured parallel to the plane of the glazing and located between 24 inches and 36 inches (610 and 914 mm) above the upper level.~~

~~4. A planter with plantings not less than 18 inches (457 mm) higher than the upper level.~~

**~~2411.4.3~~** ~~Glazed panels located adjacent to, or in doors, shall be of safety glazing, in accordance with the following:~~

~~1. All glazed panels through which a 3-inch-diameter (76 mm) sphere is able to pass.~~

~~2. In all occupancies, any glazing material adjacent to door within 48 inches (1219 mm) of the door in the closed position and below the top of the door.~~

**~~Exceptions:~~**

~~1. Wired glass in fire doors.~~

~~2. Leaded glass of 30 square inches (.02 m2) or less.~~

~~3. Curved glass in revolving doors.~~

~~4. Commercial refrigerated cabinet doors.~~

~~5. A solar screen may serve as a safeguard where such screen complies with strength requirements of railings.~~

**2411.5 Operable window safeguards.** Reserved.  ~~Operable windows shall be protected in accordance with this section.~~

**~~2411.5.1~~** ~~Where there is a drop of more than 4 feet (1219 mm) on the far side of such windows and the sill is less than 36 inch (914 mm) above the near side walking surface, safeguards shall be provided to prevent the fall of persons when such windows are open as set forth in Section 1618.4.~~

**~~Exceptions:~~**

~~1. here the vent openings are 12 inches (305 mm) or less in least dimension and are restricted in operation to reject objects as required for safeguard in Section 1618.4.~~

~~2. Slats or grillwork constructed to comply with Standard OSHA-1910, set forth in Section 1618.4 or other construction approved by the building official, may be provided in lieu of other safeguards.~~

~~3. Where the near side of such windows is less than 4 inches (102 mm) above the floor and falling objects could present a hazard, toeboards shall be provided as required by 29 CFR 1910.~~

~~4. Alternate approved designs.~~

**~~2411.5.2~~** ~~Where the drop from such windows is less than 4 feet (1219 mm) or where such windows are adjacent to a door, the glazing shall comply with the Sections 2411.4.2 and 2411.4.3.~~

**2411.6 Interior locations.** Reserved.

**~~2411.6.1~~** ~~Swinging or sliding doors of glass without a continuous frame shall be of only fully tempered glass not less than 3/8 inch (9.5 mm) in thickness.~~

**~~2411.6.2 Safeguards.~~** ~~The glazing in sliding and swinging doors and in shower to tub enclosures, including any glazing within 60 inches (1.5 m) of the finished floor surface in walls surrounding any tub or shower enclosure, shall be safety glazing as set forth in Section 2411.3.1.3 for Category II glazing products.~~

**~~2411.6.3~~** ~~Glass or mirrors immediately surrounding a bathtub or shower enclosure shall be safety glazing where the glass or mirrors are less than 60 inches (1.5 m) above the floor of the tub or the shower.~~

**~~2411.6.4~~** ~~The glazing in fixed panels adjacent to paths of egress shall comply with Section 2411.4.3.~~

**~~2411.6.5~~** ~~Glass shall not be solid painted or otherwise concealed where such painted glass may be mistaken for other construction materials.~~

**~~2411.6.6~~** ~~Glass mirrors of more than 9 square feet (0.84 m2) in area that are used as surface finish material on walls in public spaces shall be directly secured to supports and shall not be hung.~~

**2411.7 Safety glazing.** Reserved.

**~~2411.7.1~~** ~~Safety glazing, where required, shall be as set forth in this section.~~

**~~2411.7.2~~** ~~Safety glazing shall comply with the standard set forth in Section 2411.1.4 for transparent and obscure safety-glazing materials, and plastic glazing shall in addition comply with the specifications of Section 2411.7.3.~~

**~~2411.7.3~~** ~~Plastics, with or without reinforcing or acrylic modifiers shall comply with Section 2612, and consideration of dimension reduction caused by deflection and/or dimensional instability of the materials shall be given in the determination of the depth of the glazing rabbet and engagement of the plastic in the rabbet. Plastics shall be limited to spans determined by analysis and test to resist the loads set forth in Chapter 16 (High-Velocity Hurricane Zones).~~

**~~2411.7.4~~** ~~Glass louvered doors need not be safety glazed.~~

**2411.8 Sloped glazing.** Reserved.

**~~2411.8.1~~** ~~Sloped glazing includes any installation of glass or other transparent, translucent or opaque glazing material installed at a slope of 15 degrees (0.26 rad) or more from the vertical plane. Glazing materials in skylights, roofs and sloped walls are included with this definition.~~

**~~2411.8.2~~** ~~Allowable glazing materials. Sloped glazing shall be any of the following materials subject to the limitations specified in Section 2411.8.3.~~

**~~2411.8.2.1~~** ~~For monolithic glazing systems, the glazing material of the single light or layer shall be laminated with a minimum 30 mil polyvinyl butyryl (or equivalent) interlayer, wire glass, approved plastic material meeting the requirements of this chapter, heat strengthened glass or fully tempered glass.~~

**~~2411.8.2.2~~** ~~For multiple glazing systems, each light or layer shall consist of any glazing materials specified in Section 2411.8.2.1.~~

**~~2411.8.2.3~~** ~~See Section 2612 for additional requirements for plastic skylights.~~

**~~2411.8.3 Limitations.~~** ~~Heat strengthened and fully tempered glass when used in monolithic glazing systems shall have screens installed below the glazing material to protect building occupants from falling glass should breakage occur. The screens shall be capable of supporting the weight of the glass and shall be substantially supported below and installed within 4 inches (102 mm) of the glass. They shall be constructed of a noncombustible material not thinner than 0.0808 inch (2 mm) (12 B and S gauge) diameter with a mesh not larger than 1 inch by 1 inch (25 mm by 25 mm). In a corrosive atmosphere structurally equivalent corrosion-resistant screening materials shall be used. Heat-strengthened glass, fully tempered glass and wire glass, when used in multiple glazing systems as the bottom layer over the walking surface, shall be equipped with screening meeting the requirements for monolithic glazing systems.~~

**~~Exceptions:~~**

~~1. In monolithic and multiple-layer sloped glazing systems, any glazing material, including annealed glass, may be installed without required screens if the walking surface below the glazing material is permanently protected from the risk of falling glass or if the area below the glazing material is not a walking surface.~~

~~2. In monolithic and multiple layer sloped glazing systems, any glazing material, including annealed glass, may be installed in the sloped glazing systems of greenhouses (structures used primarily for growing plants) without screens provided the height of the penthouse at the ridge does not exceed 20 feet (6.1 m) above grade. Frames may be of wood construction in greenhouses located outside the fire district if the height of the sloped glazing does not exceed 20 feet (6.1 m) above grade. In other cases, noncombustible frames shall be used.~~

**~~2411.8.4 Sloped glazed framing.~~** ~~In other than Types IV II-B and III-B construction, all sloped glazing skylight frames shall be constructed of noncombustible materials. In foundries or buildings where acid fumes deleterious to metal are incidental to the use of the building, approved pressure treated woods or other approved noncombustible material shall be permitted for sash and frames. All sloped glazing and skylights shall be designed for the roof and wind loads in Chapter 16 (High-Velocity Hurricane Zones). All skylights set at an angle of less than 45 degrees (0.79 rad) from the horizontal shall be mounted at least 4 inches (102 mm) above the planer of the roof on a curb construction as required for the frame. Sloped glazing may be installed in the plane of the roof where the roof pitch is greater than 45 degrees (0.79 rad) from the horizontal.~~

***Section 2412 High-Velocity Hurricane Zones – Glass Veneer. Add section 2412 to read as shown:***

**SECTION 2412**

**HIGH-VELOCITY HURRICANE ZONES—**

**GLASS VENEER**

**2412.1** Glass veneer shall be as set forth in this section.

**2412.2 Dimension**. Glass veneer units shall be not less than 11/32 inch (8.7 mm) in thickness. No unit shall be larger in area than 10 square feet (0.93 m2) where 15 feet (4.6 m) or less above the grade directly below, nor larger than 6 square feet (0.56 m2) where more than 15 feet (4.6 m) above the grade directly below.

**2412.3 Attachment**. Every glass veneer unit shall be attached to the backing with approved mastic cement and corrosion-resistant ties and shall be supported on shelf angles.

**2412.3.1** Where more than 6 feet (1829 mm) above grade, veneer shall be supported by shelf angles, and ties shall be used in both horizontal and vertical joints.

**2412.3.2** Below a point 6 feet (1829 mm) above grade, glass veneer shall rest on shelf angles. Veneering shall not be supported on construction which is not an integral part of the wall, and over sidewalks shall be supported on a shelf angle not less than 1/4 inch (6.4 mm) above grade.

**2412.3.3** All edges of glass veneer shall be ground.

**2412.4 Mastic.**

**2412.4.1** The mastic shall cover not less than one-half of the area of the unit after the unit has been set in place and shall be neither less than 1/4 inch (6.4 mm) nor more than 1/2 inch (12.7 mm) in thickness.

**2412.4.2** The mastic shall be insoluble in water and shall not lose its adhesive qualities when dry.

**2412.4.3** Absorbent surfaces shall be sealed by a bonding coat before mastic is applied. The bonding coat shall be cohesive with the mastic.

**2412.4.4** Glass veneer surfaces to which mastic is applied shall be clean and uncoated.

**2412.4.5** Space between edges of glass veneer shall be filled uniformly with an approved type pointing compound.

**2412.5 Shelf angles and ties.**

**2412.5.1** Shelf angles shall be of corrosion-resistant material capable of supporting four times the width of the supported veneer. The shelf angles shall be spaced vertically in alternate horizontal joints, but not more than 3 feet (914 mm) apart. Shelf angles shall be secured to the wall at intervals not exceeding 2 feet (610 mm) with corrosion-resistant bolts not less than ¼ inch (6.4 mm) diameter. Bolts shall be set in masonry and secured by lead shields.

**2412.5.2** Ties shall be of corrosion resistant metal as manufactured especially for holding glass-veneer sheets to masonry surfaces. There shall be not less than one such approved tie for each 2 square feet (0.19 m2) of veneer surface.

**2412.6 Backing.** Exterior glass veneer shall be applied only upon masonry, concrete or stucco.

**2412.7 Expansion joints**. Glass veneer units shall be separated from each other and from adjoining materials by an expansion joint at least 1/16 inch (1.6 mm) in thickness. There shall be at least 1/64 inch (0.4 mm) clearance between bolts and the adjacent glass.

***Section 2413 High-Velocity Hurricane Zones – Storm Shutters/External Protective Devices. Modify section 2413 to read as shown:***

**SECTION 2413**

**HIGH-VELOCITY HURRICANE ZONES—**

**STORM SHUTTERS/EXTERNAL PROTECTIVE DEVICES**

**2413.1 General**. Unless exterior wall components including but not limited to structural glazing, doors and windows of enclosed buildings have specific Product Approval to preserve the enclosed building envelope against impact loads as set forth in Chapter 16 (High-Velocity Hurricane Zones), all such components shall be protected by product approved storm shutters.

**2413.2** The storm shutters shall be designed and constructed to insure a minimum of 1 inch (25 mm) separation at maximum deflection with components and frames of components they are to protect unless the components and frame are specifically designed to receive the load of storm shutters, and shall be designed to resist the wind pressures as set forth in Chapter 16 (High-Velocity Hurricane Zones) by methods admitting of rational analysis based on established principles of design. Storm shutter shall also be designed to comply with the impact load requirements included within Chapter 16 (High-Velocity Hurricane Zones).

**2413.3** The storm shutter design calculations and detailed drawings, including attachment to the main structure, shall be prepared by and bear the seal of a qualified Florida-registered delegated engineer, or if qualified to prepare such design, by the engineer or architect of record, which architect or engineer shall be proficient in structural design. The architect or engineer of record shall, in all instances, review and approve documents prepared by the delegated engineer.

**2413.4** Storm shutters shall be approved by the certification agency and shall bear the name of the company engraved in every section of the system.

**2413.5** Deflection shall not exceed the limits set forth in Chapter 16 (High-Velocity Hurricane Zones).

**2413.6** Reserved**.**  ~~Unless storm shutters are permanently attached to the main structure, all such storm shutters shall, where practicable, be neatly stored at all times in a designated and accessible area within the building.~~

**2413.6.1** Shutters used to protect openings above the first story of any building or structure must be permanently installed and closable from the inside of the building or structure unless such openings are accessible without the use of a ladder or lift, or shutters can be installed from the interior of the building or structure.

**Exception:** Group R3 detached single-family residences not exceeding two stories.

**2413.7** Storm shutters must completely cover an opening in all directions.

**2413.7.1** On any side of an opening, the maximum side clearance between the shutter and a wall or inset surface shall be 1/4 inch (6.4 mm). Any distance in excess of 1/4 inch (6.4 mm) shall require end closure or shutter overlap, where applicable.

**2413.7.2** Shutter overlap shall be a minimum of 1.5 times the side clearance between the shutter and wall.

**2413.7.3** End closures shall be designed to resist wind loads specified in Chapter 16 (High-Velocity Hurricane Zones), based on rational analysis.

***Section 2414 High-Velocity Hurricane Zones – Curtain Walls. Add section 2414 to read as shown:***

**SECTION 2414**

**HIGH-VELOCITY HURRICANE ZONES—CURTAIN WALLS**

**2414.1 Scope.** This section prescribes requirements for curtain walls of buildings or structures regulated by this code.

**2414.2 Definition.** A curtain wall is any prefabricated assembly of various components to enclose a building usually attached to and/or supported by the building frame other than a single door, or window, masonry units, poured in place concrete and siding of single membrane metal, wood or plastic.

**2414.3** Curtain walls, as defined in Section 2414.2, shall be designed and constructed in accordance with the requirements of this section.

**2414.4** Structural glazing in curtain walls shall also comply with the requirements of Section 2415.

**2414.5 General.**

**2414.5.1** All structural elements of curtain wall systems and their attachments (including embedments) to the main structural frame shall be designed by and bear the seal of a qualified Florida-registered delegated engineer, or if qualified to prepare such design, by the engineer or architect of record, which architect or engineer shall be proficient in structural design. The engineer of record shall, in all instances, review and approve documents prepared by the delegated engineer.

**2414.5.2** Curtain wall systems supported from more than two adjacent floors shall be designed to withstand all imposed loads without exceeding allowable stresses in the event of destruction or failure of any single span within the system. Documents for the main building permit shall include sufficient details describing the curtain wall system attachment to the main structure. This portion of the contract documents, if not prepared by the qualified engineer or architect of record, shall bear the signature and seal of the qualified Florida-registered delegated engineer charged with the responsibility for the design of the curtain wall system.

**2414.5.3** Individual mullions acting as a continuous member shall transfer loads through supports from no more than three adjacent floors.

**2414.5.4 Materials**. The materials used in any curtain wall shall comply with the applicable provisions of this code.

**2414.6 Fire protection.** Reserved.

**~~2414.6.1~~** ~~Curtain wall supports, spandrel panels, anchors and the connections at the intersection of the floor and wall shall be fire protected based on building distance separation as required in this code.~~

**~~2414.6.2~~** ~~Irrespective of distance separation, anchors, embedded hardware, connections at the intersection of the wall and floor and other connectors used to attach the curtain wall framing system to the building frame shall be provided with fire protection from the floor below with fire-resistant materials having a fire rating equivalent to that of the floor.~~

**~~2414.6.3 Reserved.~~**

**~~2414.6.4~~** ~~Openings between curtain wall systems and fire resistive floors shall be protected against the passage of fire and smoke in accordance with Section 2414.6.2~~

**~~2414.6.5~~** ~~Where fire safing is used to achieve such protection, it shall be installed in such a manner that it will remain in place for at least a duration equivalent to the fire-resistive rating of the floor system,~~

**2414.7 Inspection.** Reserved**.**  ~~Curtain wall systems and their attachments to the main structure shall be inspected by a special inspector at both the point of assembly and the point of installation.~~

***Section 2415 High-Velocity Hurricane Zones – Structural Glazing Systems. Add section 2415 to read as shown:***

**SECTION 2415**

**HIGH-VELOCITY HURRICANE ZONES—**

**STRUCTURAL GLAZING SYSTEMS**

**2415.1 Scope.** This section prescribes requirements for structural glazing systems of buildings or structures regulated by this code.

**2415.2 Application.**

**2415.2.1** Structural glazing, as defined in Section 2414.2, shall be designed and constructed in accordance with the requirements of this section.

**2415.2.2** Structural glazing systems used in curtain walls shall also comply with the requirements of Section 2414.

**2415.3 Definition.** The terms used in this section shall be defined as set forth in Section 202.

**2415.4 Standards**. Adhesives and sealants used in structural glazing systems shall comply with following standards:

ASTM C 794, Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants.

ASTM C 920, Specification for Elastomeric Joint Sealants.

ASTM D 412, Test Methods for Rubber Properties in Tension.

ASTM D 624, Test Method for Rubber Property-Tear Resistance.

ASTM D 2240, Test Method for Rubber Property-Durometer Hardness.

Federal Specifications TT-S-001543A and TT-S-00230C.

ASTM E 331, Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors.

ASTM E 330, Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors.

**2415.5 Design.**

**2415.5.1 General.** Structural glazing systems shall be designed by and bear the seal of a Florida-registered professional engineer.

**2415.5.2 Materials.**

**2415.5.2.1 Identification**. All materials shall be clearly identified as to manufacturer and manufacturer's product number.

**2415.5.2.2 Adhesives and sealants.**

**2415.5.2.2.1** Only approved silicone elastomer adhesives and sealants shall be used for fastening glass lights and other panels to curtain wall framing.

**2415.5.2.2.2** Such adhesives and sealants shall be of a polymer that is 100-percent silicone.

**2415.5.2.2.3** Adhesives and sealants shall have been tested in accordance with the standards set forth in Section 2415.4.

**2415.5.3 Manufacturer's testing, recommendation and approval.**

**2415.5.3.1** Compatibility of all components and fabrication procedures of structural glazing systems shall be tested, approved and recommended in writing by the manufacturer of the adhesive; the manufacturer of the coating; whether it is anodized, baked or otherwise applied and the manufacturer of the glass panel.

**2415.5.3.2** Manufacturer's testing, recommendation and approval shall address, but shall not be limited in scope by the following sections.

**2415.5.3.2.1** The compatibility of the sealant with metal, glazing materials, shims, spacers, setting blocks, backer rods, gaskets and other materials.

**2415.5.3.2.2** Adhesion to the designated substrates and adhesion of the substrates to the base metal.

**2415.5.3.2.3** The design and structural capability of silicone joints and cross sections.

**2415.5.4 Structural requirements.**

**2415.5.4.1 Design of structural seals.**

**2415.5.4.1.1** The design stress of the structural silicone shall not exceed 20 psi (138 kPa) for materials having a minimum strength of 100 psi (690 kPa) at the weakest element in the line of stress.

**2415.5.4.1.2** Such design stress shall also provide for a safety factor of not less than 5.0.

**2415.5.4.1.3** Safety factors greater than 5.0 shall be specified by the engineer when required or recommended by the manufacturer.

**2415.5.4.1.4** The silicone structural seal shall have a maximum modulus of elasticity to allow no more than 25 percent movement of the joint width at 20 psi (138 kPa) stress.

**2415.5.4.1.5** In insulating glass units, the secondary silicone seal shall be designed to withstand a minimum of one-half the design negative wind load applicable to the outboard lights.

**2415.5.4.2** Bonding limits. Structural glazing shall be limited to adhesive bonding on one side or on two opposing sides of an infill glass lights or panel.

**Exception:** Three- or four-side bonding shall be permitted only when structural glazing units are shop fabricated and shop glazed.

**2415.5.4.3 Job-site reglazing.**

**2415.5.4.3.1** Job-site replacement reglazing shall be permitted only when performed following a procedure approved in writing by the applicable structural silicone manufacturer.

**2415.5.4.3.2** Replacement shall be performed only by individuals or firms approved or certified by the silicone manufacturer.

**2415.6 Fire protection.** Reserved. ~~Structural glazing in curtain walls shall be fire protected as required by Section 2414.6.~~

**2415.7 Inspections, testing and recertification.**

**2415.7.1** A minimum of 1 percent of the structurally glazed panels shall be tested for load carrying capacity and sealant adhesion in accordance with Chapter 16 (High-Velocity Hurricane Zones) and ASTM E 330.

**2415.7.2** Structural glazed panels shall be inspected by a Florida-registered architect or professional engineer for conformance with the approved design and installation procedures determined by the authority having jurisdiction prior to the erection of such panels and after the seal curing period established by the silicone manufacturer.

**2415.7.3** It shall be the responsibility of the contractor to verify the adhesion of the cured sealant periodically throughout the application to assure compliance with the manufacturer's specifications and quality of application.

**2415.7.4** Structural glazing systems on threshold buildings shall be recertified by the owner as specified by the authority having jurisdiction at six month intervals for the first year after installation. Subsequently, such systems shall be recertified every five years at regular intervals.

**2415.7.5** Such recertifications shall determine the structural condition and adhesion capacity of the silicone sealant.

**Chapter 25 – Gypsum Board and Plaster**

***Section 2508.5 Horizontal gypsum board diaphragm ceilings. Change referenced Table 2508.5 [in part] to read as shown:***

**TABLE 2508.5**

**ALLOWABLE SHEAR CAPACITY FOR HORIZONTAL WOOD FRAMED**

**GYPSUM BOARD DIAPHRAGM CEILING ASSEMBLIES**

(No change to table contents)

**(Mod S5648 / AS)**

***Section 2514 High-Velocity Hurricane Zones – Lathing. Add section 2514 to read as shown:***

**SECTION 2514**

**HIGH-VELOCITY HURRICANE ZONES — LATHING**

**RESERVED**

**~~2514.1 General~~**~~. Lath shall be gypsum, metal or wire lath, as set forth herein, and shall conform to the Standard Specification for Interior Lathing and Furring, ANSI A42.4.~~

**~~2514.2 Gypsum lath.~~** ~~Gypsum lath shall conform to the Standard Specification for Gypsum Lath, ASTM C37.~~

**~~2514.2.1~~** ~~Gypsum lath shall be nailed to wood supports, at intervals not to exceed 5 inches (127 mm), with 13-gauge galvanized or blued nails having 19/64-inch (7.5 mm) diameter flat heads (7.5 mm). Nails shall be not less than 11/8-inches (29 mm) long for 3/8-inch(9.5 mm) lath nor less than 11/4-inches (32 mm) for 1/2-inch (12.7 mm) lath. Each 16-inch (406 mm) width of lath shall be secured to each support with not less than five nails except that where fire-resistive-rated construction is not required, there shall not be less than four nails.~~

**~~2514.2.2~~** ~~Lath shall be secured to horizontal or vertical metal supports by means of approved special clips.~~

**~~2514.2.3~~** ~~The center-to-center spacing of wood supports shall not exceed 16 inches (406 mm) for 3/8-inch (9.5 mm) gypsum lath and shall not exceed 24 inches (610 mm) for 1/2-inch (12.7 mm) gypsum lath.~~

**~~2514.2.4~~** ~~The center-to-center spacing for gypsum lath applied to metal studs shall not exceed that set forth herein above for wood supports except that 3/8-inch (9.5 mm) gypsum lath may be applied to metal studs spaced 24 inches (610 mm) on centers where a minimum of 3/4-inch (19 mm), three-coat plaster is applied over the lath.~~

**~~2514.2.5~~** ~~Lath shall be applied with face side out and with the long dimension at right angles to the framing members. Joints shall be broken in each course, except that end joints may fall on one support when such joints are covered with 3 inch (76 mm) wide strips of metal lath. Lath shall be butted together.~~

**~~2514.2.6~~** ~~Corner bead and inside angle reinforcing shall not be required.~~

**~~2514.2.7~~** ~~No interior lath shall be applied until the roof is on and the building is dried in.~~

**~~2514.3 Metal and wire lath.~~**

**~~2514.3.1~~** ~~Metal and wire lath and metal accessories embedded in the plaster shall be galvanized or otherwise rust-resistant by approved means. Weight tags shall be left on all metal or wire lath until approved by the building official.~~

**~~2514.3.2~~** ~~The weight of metal and wire lath and the spacing of supports shall conform to the requirements set forth in Table 2514.3.2.~~

**~~2514.3.3~~** ~~All metal lath shall be lapped 1 inch (25 mm) minimum.~~

**~~2514.3.4~~** ~~All attachments for securing metal lath, wire lath and wire fabric to supports shall be spaced not more than 6 inches (152 mm) apart, and side laps shall be secured to supports and be tied between supports at not to exceed 9 inches (229 mm) intervals.~~

**~~2514.3.5~~** ~~Metal and wire lath shall be attached to vertical wood supports with the equivalent of 4d galvanized or blue common nails driven to a penetration of at least 3/4 inch (19 mm) and bent over to engage not less than three strands of lath. Metal and wire lath shall be attached to ceiling joists or other horizontal wood supports with the equivalent of No. 11-gauge, barbed, galvanized or blued nails 11/2 inches (38 mm) long having a head not less than 3/8 inch (9.5 mm) in diameter.~~

**~~2514.3.6~~** ~~Metal and wire lath shall be attached to horizontal and vertical metal supports with the equivalent of No. 8 galvanized sheet-metal screws.~~

**~~2514.4 Nonbearing lath and plaster partitions.~~**

**~~2514.4.1~~** ~~Where reinforced plaster or pneumatically placed plaster partitions are used, they shall have vertical steel or iron channels with a depth of not less than one-third of the thickness of the partition and spaced not more than 24 inches (610 mm) on centers. The thickness of metal in the channels shall not be less than 16 U.S. standard gauge or light gauge steel studs.~~

**~~2514.4.2~~** ~~Hollow nonbearing partitions of reinforced plaster or pneumatically placed plaster shall have a shell thickness of not less than 3/4 inch (19 mm).~~

**~~2514.4.3~~** ~~Metal reinforcing shall be as set forth in Table 2514.3.2, and gypsum lath shall not be less than 3/8 inch (9.5 mm) in thickness. The minimum thickness of metal lath and plaster partitions shall be not less than 2 inches (51 mm) or 1/84 of the distance between supports.~~

**~~2514.5 Suspended and furred plaster ceilings.~~**

**~~2514.5.1 General.~~** ~~Suspended or furred plaster ceilings shall be designed and constructed as set forth herein.~~

**~~2514.5.2 Main runners.~~** ~~Main runners or carriers shall be rolled steel channels not less than the sizes and weights set forth in Table 2514.5.2.~~

~~A main runner shall be located not more than 6 inches (152 mm) from parallel walls to support the ends of cross furring. The ends of main runners at walls shall be supported by hangers located not more than 12 inches (305 mm) from such ends. Splices in main runners shall be lapped 12 inches (305 mm) and tied, each end, with double loops of No. 16-gauge wire.~~

**~~2514.5.3 Cross furring.~~** ~~Cross furring, or spacers, for various spacing of main runners or other supports shall be not less than as set forth in Table 2514.5.3.~~

**~~2514.5.3.1~~** ~~Cross furring shall be securely saddle-tied to the main runners by not less than two strands of No. 16 W and M gauge galvanized wire or equivalent approved attachments. Cross furring shall be attached to joists or beams with double No. 14 W and M gauge galvanized wire or equivalent approved attachments.~~

~~Splices in cross furring shall be lapped 8 inches (203 mm) and tied, each end, with double loops of No. 16-gauge wire.~~

**~~2514.5.4 Hangers.~~** ~~Hangers supporting suspended ceilings shall be not less than as set forth in Table 2514.5.4.~~

**~~TABLE 2514.3.2~~**

**~~WEIGHTS OF METAL AND WIRE LATH(\*)~~**

|  |  |  |  |
| --- | --- | --- | --- |
| **~~TYPE OF LATH~~** | **~~MINIMUM WGT (lb per sq yd)~~** | **~~MAXIMUM SPACING OF SUPPORTS (in.)~~** | |
| **~~For Walls~~** | **~~For Ceilings~~** |
| ~~Flat Expanded Metal Lath Flat Expanded Metal Lath Flat Rib Metal Lath Flat Rib Metal Lath~~  ~~3~~~~/~~~~8~~~~" Rib Metal Lath Sheet-Metal Lath Wire Lath Wire Fabric~~ | ~~2.5 3.4 2.75 3.4 3.4 4.5 2.48 \*\*~~ | ~~16 16 16 19 24 24 16 16~~ | ~~0 16 12 19 24 24 12 16~~ |

|  |
| --- |
| ~~For SI: 1 inch = 25.4 mm, 1 square yard = 0.8361 m~~~~2~~~~.  \* V-stiffened that expanded metal lath of equal rigidity and weight is permissible on the same spacings as~~ ~~3~~~~/~~~~8~~~~-inch rib metal lath.  \*\* Paper-backed wire fabric, No. 16-gauge wire, 2-inch by 2-inch mesh, with stiffener.~~ |

**~~TABLE 2514.5.2~~**

**~~SPANS AND SPACING OF MAIN RUNNERS~~**

|  |  |  |
| --- | --- | --- |
| **~~MINIMUM SIZE AND TYPE (inches)~~** | **~~MAXIMUM SPAN BETWEEN HANGERS OR SUPPORTS (feet, inches)~~** | **~~MAXIMUM CENTER-TO-CENTER SPACING OF RUNNERS (feet, inches)~~** |
| ~~3~~~~/~~~~4~~~~- 0.3 lb per ft 1-~~~~1~~~~/~~~~2~~~~- 0.475 lb per ft 1-~~~~1~~~~/~~~~2~~~~- 0.475 lb per ft 1-~~~~1~~~~/~~~~2~~~~- 0.475 lb per ft 1-~~~~1~~~~/~~~~2~~~~- 1.12 lb per ft 2 -1.26 lb per ft 1-~~~~1~~~~/~~~~2~~ ~~x 1-~~~~1~~~~/~~~~2~~~~{\*} by~~ ~~3~~~~/~~~~16~~ ~~angle~~ | ~~2-0  3-0 3-6 4-0 4-0 5-0 5-0~~ | ~~3-0 4-0 3-6 3-0 5-0 5-0 5-0~~ |

~~For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lb/ft = 1.4882 kg/m~~

|  |
| --- |
|  |

**~~TABLE 2514.5.4~~**

**~~HANGERS SUPPORTING SUSPENDED CEILINGS~~**

|  |  |
| --- | --- |
| **~~CEILING AREA SUPPORTED (SQUARE FEET)~~** | **~~MINIMUM SIZE OF HANGER~~** |
| ~~12.5 16 18 22.5 50~~ | ~~8-gauge wire 6-gauge wire~~  ~~3~~~~/~~~~16~~~~" rod~~  ~~1~~~~/~~~~4~~~~" rod 1" x~~ ~~3~~~~/~~~~16~~~~" flat bar~~ |
| ~~For SI: 1 inch = 25.4 mm~~ |
|  |

**~~2514.5.4.1~~** ~~Hangers shall be saddle-tied or wrapped around main runners to develop the full strength of the hangers. Hangers shall be fastened to or embedded in the structural framing, masonry or concrete. Lower ends of flat-strap hangers shall be bolted with 3/8 inch (9.5 mm) bolts to runner channels or bent tightly around corners and bolted to the main part of the hanger. Where the area of a plastered ceiling exceeds 100 square feet (93 m2), suitable methods to resist uplift forces shall be provided for each 64 square feet (6 m2) of ceiling.~~

***Section 2515 High-Velocity Hurricane Zones – Plaster. Modify section 2515 to read as shown:***

**SECTION 2515**

**HIGH-VELOCITY HURRICANE ZONES — PLASTER**

**RESERVED**

**~~2515.1 General.~~**

**~~2515.1.1~~** ~~Gypsum plastering shall conform to the Standard Specification for Gypsum Plastering, ANSI A42.1.~~

**~~2515.1.2~~** ~~Plastering with gypsum, hardwall, lime or cement plaster shall be three-coat work when applied over metal and wire lath and shall be not less than two-coat work when applied over gypsum lath or gypsum block.~~

**~~2515.1.3~~** ~~Portland cement plaster shall not be applied directly to gypsum lath.~~

**~~2515.1.4~~** ~~In no case shall a brush coat be accepted as a required coat where three-coat work is required by this section.~~

**~~2515.1.5~~** ~~Grounds shall be installed to provide for the thickness of plaster, as set forth in Table 2515.1.5, as measured from the face of the lath.~~

**~~TABLE 2515.1.5~~**

**~~REQUIRED THICKNESS OF INTERIOR PLASTER~~**

|  |  |
| --- | --- |
| **~~TYPE OF LATH~~** | **~~THICKNESS OF PLASTER (inches)~~** |
| ~~Metal or wire lath Gypsum lath~~ | ~~5~~~~/~~~~8~~ ~~minimum~~  ~~1~~~~/~~~~2~~ ~~minimum~~ |
| ~~For SI: 1 inch = 25.4 mm.~~ |

**~~2515.1.6~~** ~~If monolithic-concrete ceiling surfaces require more than 3/8 inch (9.5 mm) of plaster to produce desired lines or surfaces, metal lath or wire lath shall be attached thereto; except that special bonding agents approved by the building official may be used.~~

**~~2515.1.7~~** ~~The building official may require test holes to be made for the purpose of determining the thickness of plaster.~~

**~~2515.2 Materials.~~**

**~~2515.2.1 Aggregates.~~**

**~~2515.2.1.1~~** ~~Inorganic aggregates used for plaster and stucco shall conform to the Standard Specification for Inorganic Aggregates for Use In Gypsum Plaster, ASTM C 35, except that graduation of locally produced sand shall be such that the fineness modulus is between 1.20 and 2.35.~~

**~~2515.2.1.2~~** ~~Aggregates shall be quarried or washed in fresh water and shall contain not more than 1/20 of one percent salt, by weight.~~

**~~2515.2.2 Gypsum.~~** ~~Gypsum plaster shall conform to the Standard Specification for Gypsum Plaster, ASTM C 28.~~

**~~2515.2.3 Lime.~~** ~~Lime shall conform to the Standard Specification for Quicklime for Structural Purposes, ASTM C 5, and the Standard Specification for Special Finish Hydrated Lime, ASTM C 206.~~

**~~2515.2.4 Keene's cement.~~** ~~Keene's cement shall conform to the Standard Specification for Keene's Cement, ASTM C 61.~~

**~~2515.2.5 Portland cement.~~**

**~~2515.2.5.1~~** ~~Portland cement shall conform to the Standard Specification for Portland Cement, ASTM C 150.~~

**~~2515.2.5.2~~** ~~Approved types of plasticity agents may be added to cement in the manufacturing process or when mixing the plaster, but in no case shall the amount of the plasticity agent exceed 10 percent of the volume of cement in the plaster mixture.~~

**~~2515.2.6 Masonry cement.~~** ~~Masonry cement shall be Type II and shall conform to the Standard Specification for Masonry Cement, ASTM C 91.~~

**~~2515.3 Proportioning and mixing.~~**

**~~2515.3.1 Base coats.~~** ~~The proportions of sand, vermiculite or perlite to 100 pounds (45.4 kg) of gypsum neat plaster shall not exceed the requirements in this section.~~

**~~2515.3.1.1 Gypsum or hardwall plaster.~~** ~~Gypsum or hardwall plaster shall be proportioned in accordance with Section 2515.3.1.1.~~

**~~2515.3.1.2 Wood-fiber gypsum plaster.~~** ~~Wood-fiber gypsum plaster for use on all types of lath shall be mixed with water only and shall be mixed in the proportion of one part of plaster to one part of sand, by weight, for use on masonry.~~

**~~2515.3.1.3 Ready mixed plaster.~~** ~~Gypsum ready-mixed plaster shall be in the proportion of 100 pounds (45.4 kg) of gypsum neat plaster to not more than 250 pounds (113 kg) of sand; or when vermiculite or perlite is used as an aggregate, the proportions shall be 100 pounds (45.4 kg) of gypsum neat plaster to not more than 21/2 cubic feet (0.07 m3) vermiculite or perlite.~~

**~~2515.3.1.4 Portland cement plaster.~~** ~~For three-coat work, the first two coats shall be required for the first two coats of exterior stucco (see Section 2516).~~

**~~2515.3.1.5 Masonry cement plaster.~~** ~~For two- or three-coat work, all work shall be set forth in Section 2515.~~

**~~2515.3.2 Finish coats for gypsum or lime plaster.~~** ~~The finish coats shall be mixed and proportioned in accordance with this section.~~

**~~2515.3.2.1~~** ~~Smooth white finish, mixed in the proportion of not less than one part gypsum gaging plaster to three parts lime putty, by volume, or an approved prepared gypsum trowel finish.~~

**~~2515.3.2.2~~** ~~Sand-float finish, mixed in the proportion of one-half part of Keene's cement to two parts of lime putty and not more than four and one-half parts of sand, by volume, or an approved gypsum sand-float finish.~~

**~~2515.3.2.3~~** ~~Keene's cement finish, mixed in the proportion of three parts Keene's cement to one part lime putty, by volume.~~

**~~2515.3.2.4~~** ~~Lime sand-float finish, mixed in the proportion of three parts lime putty to three parts sand, by volume.~~

**~~2515.3.2.5~~** ~~Finish coat for perlite or vermiculite aggregate plasters, mixed in the proportion of 1 cubic foot (28 339 cc) of aggregate to 100 pound (45 kg) of unfibered gypsum plaster, or mixed according to manufacturer's specifications.~~

**~~2515.3.3 Finish coat for Portland cement plaster.~~** ~~Finish coats for interior Portland cement plaster shall be one of the following:~~

~~1. As required for the third coat of exterior stucco. See Section 2413.~~

~~2. A gaged cement plaster mixed in proportion of one part Portland cement to not more than 15 percent lime putty and not more than four parts of sand, by volume.~~

**~~2515.3.4 Finish coat for masonry cement plaster.~~** ~~Finish coat for masonry cement plaster shall be as set forth in Section 2515.4.2.3.~~

**~~2515.4 Application.~~**

**~~2515.4.1 Base coats.~~**

**~~2515.4.1.1 Gypsum plaster.~~** ~~The scratch coat shall be applied with sufficient material and pressure to form a full key or bond.~~

**~~2515.4.1.1.1~~** ~~For two-coat work it shall be doubled back to bring the plaster out to grounds and straightened to a true surface and left rough to receive the finish coat.~~

**~~2515.4.1.1.2~~** ~~For three-coat work, the scratch (first) coat shall be scratched to a rough surface. The brown (second) coat shall be applied after the scratch coat has set firm and hard, brought out to grounds, straightened to a true surface with rod and darby and left rough, ready to receive the finish (third) coat.~~

**~~TABLE 2515.3.1.1~~**

**~~GYPSUM AND HARDWALL PLASTER~~**

|  |  |  |  |
| --- | --- | --- | --- |
| **~~APPLICATION METHOD~~** | | **~~DAMP LOOSE SAND (LB)~~** | **~~VERMICULITE OR PERLITE (CU FT)~~** |
| ~~TWO-COAT WORK (DOUBLE-UP METHOD) (1) Over gypsum lath (2) Over masonry~~~~2~~ | | ~~250 300~~ | ~~2-~~~~1~~~~/~~~~2~~ ~~3~~ |
| ~~THREE-COAT WORK (1) First (scratch) coat over lath (2) First (scratch) coat over masonry (3) All second (brown) coats~~ | | ~~200~~~~1~~ ~~300 300~~~~1~~ | ~~2 3 3~~ |
| ~~For SI: 1 cubic foot = 0.02832 m~~~~3~~~~, 1 pound = 0.454 kg.  1. Except over monolithic concrete.  2. In lieu of the proportioning specified, the proportions may be 100 pounds of gypsum neat plaster to not more than 250 pounds of damp, loose sand or 2~~~~1~~~~/~~~~2~~ ~~cubic feet of vermiculite or perlite, provided this proportioning is used for both scratch and brown coats.~~ | |

**~~2515.4.1.1.3~~** ~~The finish coat shall be applied to a practically dry base coat or to a thoroughly dry base coat which has been evenly wetted by brushing or spraying. The use of excessive water shall be avoided in the application of all types of finish coat plastering.~~

**~~2515.4.1.2 Portland cement plaster.~~** ~~The first two coats shall be as required for the first two coats of exterior stucco, except that the interval between the first and second coats shall be not less than 24 hours.~~

**~~2515.4.1.3 Masonry cement plaster.~~** ~~Where masonry cement is the only cementitious material, the second coat may be applied to the base coat as soon as the base coat has attained sufficient strength and rigidity to support the second (finish) coat.~~

**~~2515.4.2 Finish.~~**

**~~2515.4.2.1~~** ~~Smooth white finish shall be applied over the base coat that has set for a period of not less than 24 hours and is surface dry. Thickness shall be from 1/16 inch to 1/8 inch (1.6 mm to 3.3 mm).~~

**~~2515.4.2.2~~** ~~Sand-float finish shall be applied over the set base coat that is not quite dry.~~

**~~2515.4.2.3~~** ~~Keene's cement finish shall be applied over the set base coat that is not quite dry. Thickness shall be from 1/16 inch to 1/8 inch (1.6 to 3.3 mm), unless finish coat is marked off or is jointed; in which case, the thickness may be increased as required by depth of marking or jointing.~~

**~~2515.4.2.4~~** ~~The finish coat for interior Portland cement plastering shall be applied in the same manner as required for the third coat of exterior stucco, except that other types of finish coat may be applied as specified in Section 2413.~~

**~~2515.4.2.5~~** ~~The finish coat for lightweight aggregate plastering shall be from 1/16 inch to 1/8 inch (1.6 mm to 3.3 mm).~~

**~~2515.4.3 Plaster on concrete.~~**

**~~2515.4.3.1~~** ~~Monolithic concrete surfaces shall be clean, free from efflorescence, damp and sufficiently rough to insure adequate bond.~~

**~~2515.4.3.2~~** ~~Gypsum plaster applied to monolithic-concrete ceilings shall be specially prepared bond plaster for use on concrete, to which only water shall be added. Gypsum plaster on monolithic walls and columns shall be applied over a scratch coat of bond plaster, or other bonding material, before it has set. The brown coat shall be brought out to grounds, straightened to a true surface and left rough, ready to receive the finish coat.~~

**~~2515.4.3.3~~** ~~Portland cement plaster applied to interior concrete walls or ceilings shall conform to requirements for application to exterior concrete walls as specified in Section 2516.~~

***Section 2516 High-Velocity Hurricane Zones – Stucco. Change section 2516 to read as shown:***

**SECTION 2516**

**HIGH-VELOCITY HURRICANE ZONES —STUCCO**

**RESERVED**

**~~2516.1 General.~~**

**~~2516.1.1~~** ~~Portland cement-based plaster shall be applied in accordance with ASTM C 926, excluding Table 4 of that standard.~~

**~~2516.1.2~~** ~~Stucco base and finish coats, where required to meet fire-resistance requirements, shall be mixed in proportion of at least one part portland cement to a maximum of two and one-half parts sand by volume.~~

**~~2516.1.3~~** ~~Approved manufacturing products may be used for base and finish coats.~~

**~~2516.1.4 Materials~~**~~. The materials of stucco shall conform to ASTM C 926.~~

**~~2516.1.5 Admixtures.~~**

**~~2516.1.5.1~~** ~~Plasticity agents shall be of approved types and amounts and, where added to Portland cement in the manufacturing process, no additions shall be made later.~~

**~~2516.1.5.2~~** ~~Color may be added to the finish coat in approved amounts.~~

**~~2516.1.6 Application.~~**

**~~2516.1.6.1~~** ~~Stucco applied to concrete or masonry to meet fire-resistance requirements shall consist of at least two coats, and the total thickness shall be not less than 1/2 inch (12.7 mm).~~

**~~2516.1.6.2~~** ~~Masonry surfaces on which all stucco is applied shall be clean, free from efflorescence, damp and sufficiently rough, or coated with an approved bonding agent, to insure proper bond.~~

**~~2516.1.6.3~~** ~~All concrete surfaces shall be coated with an approved bonding agent or shall be effectively roughened.~~

**~~2516.1.6.4~~** ~~The first coat shall be well forced into the pores of the masonry, shall be brought out to grounds, straightened to a true surface and left rough enough to receive the finish coat.~~

**~~2516.1.6.5~~** ~~The first coat shall be rodded and waterfloated to a true surface approximately one-half the total thickness.~~

**~~2516.1.6.6~~** ~~The base coat shall be damp cured for a period of not less than 24 hours.~~

**~~2516.1.6.7~~** ~~In lieu thereof, the finish coat, where containing appropriate waterproofing or curing admixtures, may be applied as soon as the base coat has attained initial set and is sufficiently firm to receive the finish coat.~~

**~~2516.1.6.8~~** ~~The finish coat shall be applied over a uniformly damp but surface-dry base.~~

**~~2516.1.6.9~~** ~~Stucco shall be kept damp for a period of not less than 48 hours after application of the finish coat.~~

**~~2516.1.6.10~~** ~~In lieu thereof, the finish coat may contain appropriate approved waterproofing or curing agents. Leave in per Broward request~~

**~~2516.2 Stucco on walls other than concrete or masonry.~~**

**~~2516.2.1 General.~~** ~~Stucco shall be as set forth in Section 2516.1~~

**~~2516.2.2 Moisture barrier.~~** ~~Wood shall be covered with 15- pound (7 kg) roofing felt, or other approved equally moisture-resisting layer, and metal reinforcement as set forth herein.~~

**~~2516.2.3 Metal reinforcement.~~**

**~~2516.2.3.1~~** ~~Stucco shall be reinforced with galvanized expanded metal weighing no less than 1.8 pounds per square yard (0.98 kg/m2), or galvanized welded or woven wire-fabric weighing no less than 1 pound per square yard (0.54 kg/m2).~~

**~~2516.2.3.2~~** ~~All metal lathing shall be lapped not less than 1 inch (25 mm).~~

**~~2516.2.3.3~~** ~~Metal reinforcement shall be furred out from the backing by an approved method.~~

**~~2516.2.3.4~~** ~~Fastenings into wood sheathing or wood framing shall be by galvanized nails, with heads not less than 3/8 inch (9.5 mm) in diameter, driven to full penetration, using a minimum of two nails per square foot (0.093 m2), or by approved staples having equal resistance to withdrawal.~~

**~~2516.2.3.5~~** ~~The fastening of rib-lath to metal members shall be by #8 galvanized sheet-metal screws, using a minimum of two screws per square foot (0.093 m2).~~

**~~2516.2.4 Application.~~**

**~~2516.2.4.1~~** ~~Stucco applied on metal lath shall be three-coat work applied to a total thickness of not less than 7/8inch (22.2 mm) thickness except as required to meet fire-resistance requirements.~~

**~~2516.2.4.2~~** ~~The first coat shall be forced through all openings in the reinforcement to fill all spaces and scored horizontally.~~

**~~2516.2.4.3~~** ~~The second coat shall be applied after the first coat has set sufficiently to provide a rigid backing.~~

**~~2516.2.4.4~~** ~~The third coat shall be applied as soon as the second coat has attained initial set.~~

**~~2516.3 Pneumatically placed stucco.~~**

**~~2516.3.1~~** ~~Pneumatically-placed stucco shall consist of a mixture of one part Portland cement to not more than five parts sand, conveyed through a pipe or flexible tube and deposited by pressure in its final position.~~

**~~2516.3.2~~** ~~Rebound material may be screened and reused as sand in an amount not greater than 25 percent of the total sand in any batch.~~

**~~2516.3.3~~** ~~Plasticity agents may be used as specified in Section 2516.1.5.1.~~

***Section 2517 High-Velocity Hurricane Zones – Gypsum Board Products and Accessory Items. Change Section 2517 to read as shown:***

**SECTION 2517**

**HIGH-VELOCITY HURRICANE ZONES —**

**GYPSUM BOARD PRODUCTS AND ACCESSORY ITEMS**

**RESERVED**

**~~2517.1 General.~~**

**~~2517.1.1~~** ~~Gypsum wallboard products and related items and accessories to be used with or without the addition of plaster for partitions, walls and ceilings shall be as set forth in this section.~~

**~~2517.1.2~~** ~~Where required to be fire resistive, such assemblies shall also comply with Chapter 7 of this code.~~

**~~2517.2 Standards.~~** ~~The following standards are adopted as set forth in Chapter 35.~~

~~Application and finishing of gypsum wallboard GA-216-07~~

~~Fire resistance Design Manual GA-600-06~~

~~Specification for Gypsum Wallboard, ASTM C 36.~~

~~Specification for General Requirements for Zinc-Coated (Galvanized) Steel Sheets, by the Hot-Dip Process, ASTM A 525.~~

~~Specification for Light-gauge Steel Studs, Runners, and Rigid Furring Channels, ASTM C 645.~~

~~Specification for Joint Treatment Materials for Gypsum Wallboard Construction, ASTM C 475.~~

**~~2517.3 Gypsum wallboard.~~**

**~~2517.3.1~~** ~~The gypsum wallboard shall comply with the standards set forth in Section 2517.2, and single or multiple system combinations shall be not less than 1/2 inch (12.7 mm) in thickness.~~

**~~2517.3.2~~** ~~The span between supports for gypsum wallboard shall be not more than 24 inches (610 mm) for 1/2 inch (12.7 mm) thick and 5/8 inch (17.1 mm) thick wallboard.~~

**~~2517.3.3~~** ~~Gypsum wallboard used in fire-rated assemblies shall be of a type for which test ratings are available.~~

**~~2517.4 Wood studs and wood ceiling supports.~~** ~~Wood studs and wood ceiling supports shall comply with Chapter 23 (High-Velocity Hurricane Zones).~~

**~~2517.5 Steel studs, ceiling supports and track runners.~~**

**~~2517.5.1~~** ~~Steel studs and runners used to construct fire-resistive walls or partitions shall be hot-dipped galvanized in accordance with ASTM A 525, coating designation G40, minimum and be of channel or "C"-type shape. The total thickness of the base metal plus coating shall not be less than 0.0184 inch (0.467 mm) unpainted and not less than 0.0194 inch (0.493 mm) if coated and painted. Studs and runners shall comply with ASTM C 645 and have a base metal thickness, before application of any coating, of not less than 0.0179 inch (0.455 mm). Structural properties of such studs and runners shall comply with ASTM C 645.~~

**~~2517.5.1.1~~** ~~Steel studs supporting wall hung plumbing fixtures shall be doubled or not less than 20 gauge with a minimum effective moment of inertia equal to 0.864 in.4 (360 m4 ).~~

**~~2517.5.1.2~~** ~~Such studs shall be rigidly connected top and bottom to prevent significant end rotation or displacement.~~

**~~2517.5.1.3~~** ~~A horizontal member securely fastened to not less than two studs shall be installed for the attachment of each wall hung plumbing fixture.~~

**~~2517.5.2~~** ~~The unsupported height of partitions shall comply with the loads and deflections set forth in Chapter 16 (High- Velocity Hurricane Zones) and where wallboard is suitably attached, the composite action may be accounted for in the design.~~

**~~2517.5.3~~** ~~Steel ceiling supports shall comply with Section 2514.5.~~

**~~2517.5.4~~** ~~Steel studs track runners and ceiling supports in walls, including curtain walls, shall comply with ASTM A 525.~~

**~~Exception:~~** ~~Such members in interior nonload-bearing walls need not be galvanized but shall comply with ASTM C 645.~~

**~~2517.6 Attachments.~~**

**~~2517.6.1~~** ~~Attachments shall be as set forth herein and for fire-rated assemblies shall also conform to the material and conditions of the assembly tested.~~

**~~2517.6.2~~** ~~Attachment to wood supporting members shall conform to the standard set forth in Section 2517.2.~~

**~~2517.6.3~~** ~~Nails and screws attaching gypsum wallboard shall, without substantially fracturing the surface paper, be driven below the surface and spotted with finishing joint compound.~~

**~~2517.6.4~~** ~~Attachment to metal members shall be in accordance with Section 2517.6.4.1 through Section 2517.6.4.5.~~

**~~2517.6.4.1~~** ~~Gypsum wallboard shall be attached to metal members by self-drilling, self-tapping sheet metal screws.~~

**~~2517.6.4.2~~** ~~The spacing of screws attaching gypsum wallboard to metal studs and runners, shall be not more than 12 inches (305 mm) on center.~~

**~~2517.6.4.3~~** ~~Screws for attaching gypsum wallboard to metal studs shall be not less than 7/8 inch (22.2 mm) long for 1/2 inch (17.7 mm) wallboard or 1 inch (25.4 mm) long for 5/8 inch (17.1 mm) wallboard.~~

**~~2517.6.4.4~~** ~~Screws attaching gypsum wallboard shall be driven below the surface and spotted with finishing compound.~~

**~~2517.6.4.5~~** ~~Runners shall be fastened to the ceiling, contiguous walls and partitions and to the floor at intervals not exceeding 24 inches (610 mm) on center. Such attachment may be by nails penetrating the base material not less than 5/8 inch (17.1 mm) or by self-drilling, self-tapping sheet metal screws attaching metal to metal.~~

***Section 2518 High-Velocity Hurricane Zones –Suspended and Furred Ceilings. Modify section 2518 to read as shown:***

**SECTION 2518**

**HIGH-VELOCITY HURRICANE ZONES —**

**SUSPENDED AND FURRED CEILINGS**

**RESERVED**

**~~2518.1 General.~~** ~~Lath and plaster ceilings shall be as set forth in this chapter.~~

**~~2518.2~~** ~~Suspended and furred ceilings, other than lath and plaster where providing fire protection shall comply with Chapter 7.~~

**~~2518.3~~** ~~Suspended and furred ceilings, other than lath and plaster, shall be suspended and supported in conformance with the conditions of fire tests or, if not tested, as recommended by the manufacturer or as required for structural stability.~~

***Section 2519 High-Velocity Hurricane Zones –Asbestos. Modify section 2519 to read as shown:***

**SECTION 2519**

**HIGH-VELOCITY HURRICANE ZONES —ASBESTOS**

**RESERVED**

**~~2519.1~~** ~~Asbestos cement shall not be permitted for use under this code.~~

***Section 2520 High-Velocity Hurricane Zones –Tile. Modify section 2520 to read as shown:***

**SECTION 2520**

**HIGH-VELOCITY HURRICANE ZONES —TILE**

**RESERVED**

**~~2520.1~~** ~~Ceramic and Portland cement floor tile shall be set on a concrete slab or on wood sheathing on wood joists protected by a waterproof membrane.~~

**~~2520.2~~** ~~Floor tile shall be set in a mortar bed of one part portland cement to three parts aggregate or otherwise bedded in an approved adhesive material.~~

**~~2520.2.1~~** ~~Ceramic and portland cement wall tile used in areas subject to frequent wearing shall be backed with masonry, stucco on wire lath or approved tile backer board.~~

**~~2520.2.2~~** ~~Wall tile used in areas not subject to frequent wearing shall be backed by a cladding having the rigidity of stucco on wire lath and shall be bedded in cement mortar or other approved adhesive material.~~

**~~2520.3~~** ~~Portland cement or other porous tile shall be soaked in water not less than 1 hour before placing.~~

**~~2520.4~~** ~~Built-in tubs with overhead showers shall have waterproof joints between the tub and the wall and floor.~~

**Chapter 26 - Plastic**

***Section 2601 – General. Change Section 2601.1 to read as shown:***

**2601.1 Scope.** These provisions shall govern the materials, design, application, construction and installation of foam plastic, foam plastic insulation, plastic veneer, interior plastic finish and trim and light-transmitting plastics. See Chapter 14 for requirements for exterior wall finish and trim.

**Exception:** Buildings and structures located within the high-velocity hurricane zone shall also comply with the provisions of Section 2614.

***Section 2603 – Foam Plastic Insulation. Change Section 2603.9 to read as shown:***

**2603.9 Protection against termites.** In Florida ~~areas where the probability of termite infestation is very heavy in accordance with Figure 2603.9~~, 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 preservative-treated wood.

2. An approved method of protecting the foam plastic and structure from subterranean termite damage is provided.

3. On the interior side of basement walls.

***Section 2603 – Foam Plastic Insulation. Change Figure 2603.9 to read as shown:***

**FIGURE 2603.9**

**TERMITE INFESTATION PROBABILITY MAP**

**Reserved.**

***Section ~~2612~~ 2614 High-Velocity Hurricane Zones –Plastics. Modify section ~~2612~~ 2614 to read as shown:***

**SECTION ~~2612~~ 2614**

**HIGH-VELOCITY HURRICANE ZONES —**

**PLASTICS**

**~~2612.1~~ 2614.1 General.**

**~~2612.1.1~~** **2614.1.1** Plastic materials used as structural elements shall be designed by methods admitting of rational analysis according to established principles of mechanics.

**~~2614.1.2~~** ~~Plastic materials may be permitted as set forth herein. The physical properties, such as, not but limited to, weather-resistance, fire-resistance and flame spread characteristics, shall comply with the requirements of this code.~~ **RESERVED?**

**~~2614.1.3~~** ~~Application and plans submitted for proposed construction shall identify the plastic material intended for use and such material shall be stamped or otherwise marked so as to be readily identifiable in the field.~~ **RESERVED?**

**~~2612.1.4~~** **2614.1.4** Plastic structural elements, other than sheets, shall be designed by a Florida-registered professional engineer or a Florida-registered architect.

**~~2612.2~~** **2614.2** **Definitions.**

**~~APPROVED FOAM PLASTIC.~~** ~~An approved foam plastic shall be any thermoplastic, thermosetting or reinforced thermosetting plastic material that has a minimum self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D 1929. It shall have a smoke density rating not greater than 450 and a flame spread of 75 or less when tested in accordance with ASTM E 84.~~

**APPROVED PLASTIC.** ~~An approved plastic shall be any thermoplastic, thermosetting or reinforced thermosetting plastic material which has a self-ignition temperature of 650°F (343°C), or greater when tested in accordance with ASTM D 1929, a smoke density rating no greater than 450 when tested in the way intended for use by ASTM E 84 or a smoke density rating no greater than 75 when tested in the thickness intended for use according to ASTM D 2843 and which meets one of the following combustibility classifications:~~

~~Class C-1. Plastic materials that have a burning extent of 1 inch per minute (25.4 mm) or less when tested in nominal 0.060 inch (1.5 mm) thickness or in the thickness intended for use by ASTM D 635.~~

~~Class C-2. Plastic materials that have a burning rate of 21/2 inches (64 mm) per minute or less when tested in nominal 0.060 inch (1.5 mm) thickness or in the thickness intended for use by ASTM D 635.~~

Approved plastics for outdoor exposure shall be evaluated for outdoor durability in accordance with the Voluntary Standard Uniform Load Test Procedure for Thermoformed Plastic Domed Skylights, of the AAMA/WDMA 101/IS2/NAFS, Voluntary Performance Specification for Windows, Skylights and Glass Doors, as follows:

1. Outdoor exposure conditions: Specimen exposed in Florida at 45 degree south exposure for a period of five years.

a. Impact testing, after exposure test as above, per ASTM D 256, and

b. Tensile testing on controlled and weathered specimen per ASTM D 638. Yield strength difference between controlled and weathered specimen shall not exceed 10 percent.

2. Alternate:

a. Exposure to xenon arc weatherometer using a 6500-watt lamp per ASTM G 155 and ASTM D 2565 for a period of 4,500 hours.

b. Impact testing, after exposure test as above, per ASTM D 256, and

c. Tensile testing on controlled and weathered specimen per ASTM D 638. Yield strength difference between controlled and weathered specimen shall not exceed 10 percent.

**~~FINISH RATING.~~** ~~The time, as determined in accordance with ASTM E 119, at which a thermal barrier reaches a temperature rise of 240°F (116°C) , above ambient or an individual temperature rise of 324°F (162°C), above ambient as measured on the plane of the thermal barrier nearest to foam plastic.~~

**~~FLAME SPREAD RATING.~~** ~~The measurement of flame spread on the surface of materials or their assemblies as determined in accordance with ASTM E 84.~~

**~~GLASS FIBER REINFORCED PLASTIC.~~** ~~Plastic reinforced with glass fibers having not less than 20 percent of glass fibers by weight.~~

**~~LIGHT DIFFUSING SYSTEM.~~** ~~A suspended construction consisting in whole or in part of lenses, panels, grids or baffles suspended below independently mounted electrical lighting sources.~~

**~~PLASTIC GLAZING.~~** ~~Plastic materials that are glazed or set in frame or sash and not held by mechanical fasteners which pass through the glazing material.~~

**~~PLASTIC ROOF PANELS.~~** ~~Plastic materials that are fastened to structural panels or sheathing and which are used as light transmitting media in the plane of the roof.~~

**~~PLASTIC SANDWICH PANELS.~~** ~~Panels of foam plastic sandwiched between incombustible skins.~~

**~~PLASTIC WALL PANELS~~**~~. Plastic materials that are fastened to structural panels or sheathing and which are used as light transmitting medium in exterior walls.~~

**~~SKYLIGHT.~~** ~~An assembly that includes plastic materials used as light transmitting medium and which is located above the plane of the roof.~~

**~~SMOKE DENSITY.~~** ~~A numerical value of smoke development, determined by measuring the area under the curve of light absorption versus time, in accordance with ASTM E 84 or ASTM D 2843.~~

**~~THERMOPLASTIC MATERIALS.~~** ~~A plastic material that is capable of being repeatedly softened by increase of temperature and hardened by decrease of temperature.~~

**~~THERMOSETTING MATERIALS.~~** ~~A plastic material that is capable of being changed into a substantially nonreformable product when cured.~~

**2614.3 Foam plastics.** Reserved.

**~~2614.3.1 General.~~**

**~~2614.3.1.1~~** ~~Except as otherwise provided herein, all foam plastics or foam plastic cores in manufactured assemblies used in building construction shall have a flame spread rating of not more than 75 and shall have a smoke-developed rating of not more than 450 when tested in the maximum thickness intended for use in accordance with ASTM E 84.~~

**~~2614.3.1.2~~** ~~Except as otherwise provided herein, foam plastics shall be separated from the interior walls, floors and ceiling herein of a building by an approved thermal barrier of 1/2 inch (13 mm) gypsum wallboard or equivalent thermal barrier material which will limit the average temperature rise of the unexposed surface to not more than 259°F (126°C), after 15 minutes of fire exposure complying with the ASTM E 119 standard time-temperature curve.~~

**~~2614.3.1.3~~** ~~Foam plastics trim, defined as picture molds, chair rails, baseboards, handrails, ceiling beams, door trim and window trim, shall also meet requirements for interior finish in Section 805.~~

**~~2614.3.1.4~~** ~~Foam plastic not meeting the requirements of this section may be specifically approved on the basis of approved tests such as, but not limited to, a tunnel test in accordance with ASTM E 84, FM procedure 4880, UL Subject 1040, ASTM E 152 or the room test procedure described in SPI Bulletin PPICC 401 or fire tests related to actual end-use configuration. The specific approval may be based on the end use, quantity, location and similar considerations where such tests would not be applicable or practical.~~

**~~2614.3.2 Specific requirements.~~** ~~The following specific requirements shall apply to all uses of foam plastics unless otherwise permitted in this code.~~

**~~2614.3.2.1 Cold storage buildings.~~**

**~~2613.3.2.1.1~~** ~~Foam plastics when tested in a thickness of 4 inches (102 mm), may be used in a thickness up to 10 inches (254 mm) when the building is equipped with an approved automatic fire suppression system.~~

**~~2614.3.2.1.2~~** ~~Such approved automatic fire suppression system shall be provided in both the cold storage room and the part of the building in which the room is located.~~

**~~2614.3.2.2 Walk-in coolers.~~**

**~~2614.3.2.2.1~~** ~~Foam plastic having a maximum flame spread of 75 may be used in a thickness up to 4 inches (102 mm) in free-standing walk-in cooler or freezer units less than 400 square feet (37 m2) in floor area without a thermal barrier and without an automatic fire suppression system when the foam plastic is covered by a metal facing not less than 0.032 inch (0.813 mm) thick aluminum or corrosion-resistant steel having a minimum of base metal thickness of 0.016 inch (0.406 mm).~~

**~~2614.3.2.2.2~~** ~~When protected by a thermal barrier, the foam plastic may be used in a thickness up to 10 inches (254 mm).~~

**~~2614.3.2.3 Exterior walls of one-story buildings.~~**

**~~2614.3.2.3.1~~** ~~Foam-plastic insulation having a flame spread of 25 or less may be used without thermal barriers in or on exterior fire resistive incombustible walls in a thickness of not less than 0.032 inch (0.813 mm) aluminum or corrosion-resistant steel having a minimum base metal thickness of 0.0160 inch (0.406 mm), and the insulated interior area is protected with automatic sprinklers.~~

**~~2614.3.2.3.2~~** ~~Foam plastic may be used without the thermal barrier described herein when it is protected by a minimum of 1 inch (25.4 mm) thickness of masonry or concrete.~~

**~~2614.3.2.4 Exterior walls of multistory buildings.~~**

**~~2614.3.2.4.1~~** ~~Where walls face a street or permanent open space of 30 feet (9 m) or more, foam-plastic insulation may be used in a nonfire-rated exterior wall assembly.~~

**~~2612.3.2.4.2~~** ~~Where a separation of less than 30 feet (9 m) exists, foam plastic may be used within exterior walls, provided the wall assembly affords the required fire resistivity.~~

**~~2614.3.2.4.3~~** ~~Foam-plastic insulation shall be separated from the building interior by a thermal barrier having an index of 15 unless a specific approval is obtained on the basis of Section 2612.3.1.4.~~

**~~2614.3.2.4.4~~** ~~The amount of foam plastic in any portion of the wall or panel shall not exceed 6000 Btu/square foot (68.1 MJ/m2) of projected area as determined by tests conducted in accordance with NFPA 259.~~

**~~2614.3.2.4.5~~** ~~The foam plastic core, coatings and facings shall have a flame spread rating of 25 or less and smoke-developed rating of 450 or less as determined in accordance with ASTM E 84.~~

**~~2614.3.2.4.6~~** ~~Facing, coating and core materials shall be mechanically or adhesively fastened to each other and to building members to prohibit failure in bond as a result of temperatures which may be experienced in a building fire from wind loads or other conditions.~~

**~~2614.3.2.4.7~~** ~~Results of diversified or full-scale fire tests reflecting an end-use configuration shall be submitted to the building official demonstrating the assembly in its final form does not propagate the flame over the surface or through the core when exposed on the exterior face to a fire source.~~

**~~2614.3.2.5 Roofing.~~**

**~~2614.3.2.5.1~~** ~~Foam plastic may be used in a roof covering assembly without the thermal barrier when the foam is separated from the interior of the building by plywood sheathing not less than 1/2 inch (12.7 mm) in thickness bonded with exterior glue, with edge supported by blocking, tongue-and-grooved joints or other approved type of edge support, or an equivalent or better material or system.~~

**~~2614.3.2.5.2~~** ~~Foam-plastic roof insulation that complies with FM 4450 or UL 1256 need not meet the requirements of Section 2612.3.1.2.~~

**~~2614.3.2.5.3~~** ~~For all roof applications, the smoke developed rating shall not be limited.~~

**~~2614.3.2.6 Attics and crawl spaces.~~**

**~~2614.3.2.6.1~~** ~~Within an attic or crawl space where entry is made for service of utilities, exposed foam plastics shall be protected against ignition by 1-inch-thick (25 mm) mineral fiber insulation, 1/4-inch-thick (6.4 mm) plywood, particleboard or hardboard or 3/8-inch (9.5 mm) gypsum wall board, corrosion-resistant steel having a base metal thickness of 0.0160 inch (0.406 mm), or other equivalent material installed in such manner that the foam plastic is not exposed.~~

**~~2614.3.2.6.2~~** ~~The protective covering shall also meet the requirements for the type of construction.~~

**~~2614.3.2.7 Doors.~~**

**~~2614.3.2.7.1~~** ~~Where doors are permitted without a fire-resistance rating, foam plastic having a flame spread rating of 75 or less may be used as a core material when the door facing is metal having a minimum thickness of 0.032 inch (0.813 mm) aluminum or sheet steel having a minimum thickness of 0.0160 inch (0.406 mm).~~

**~~2614.3.2.7.2~~** ~~There shall be no thermal barrier requirements for these doors.~~

**2614.4 Light-transmitting plastics.** Reserved**.**

**~~2614.4.1 General.~~**

**~~2614.4.1.1~~** ~~The provisions of this section shall govern the quality and methods of application of plastics for use as light transmitting media within buildings and structures.~~

**~~2614.4.1.2~~** ~~All plastics to be used according to the provisions of this section shall be approved plastic and conform to Section 2612.1 and Section 2612.2.~~

**~~Exception:~~** ~~Roof coverings over terraces and patios of one- and two-family dwellings shall be permitted with approved plastics.~~

**~~2614.4.2 Glazing of openings in nonfire-rated walls.~~**

**~~2614.4.2.1~~** ~~Doors, sash and framed openings which are not required to be fire rated may be glazed with approved plastic materials in buildings of Type III-B construction.~~

**~~2614.4.2.2~~** ~~In all other types of construction openings not required to be fire-rated may be glazed or equipped with approved plastic material subject to the requirements listed below.~~

**~~2614.4.2.2.1~~** ~~The area of such glazing shall not exceed 25 percent of the wall face of the story in which it is installed.~~

**~~2614.4.2.2.2~~** ~~The area of a unit or pane of glazing installed above the first story shall not exceed 16 square feet (1.49 m2) and the vertical dimension of a unit or pane shall not exceed 4 feet (1219 mm). There shall be a minimum 3 feet (914 mm) vertical spandrel wall between stories.~~

**~~2614.4.2.2.3~~** ~~Approved plastics shall not be installed more than 75 feet (22.9 m) above grade level except as provided in Section 2612.4.2.2.4.~~

**~~2614.4.2.2.4~~** ~~Approved thermoplastic materials may be installed in areas up to 50 percent of the wall area of each story in structures less than 150 feet (45.7 m) in height if continuous architectural projections constitute an effective fire barrier extending at least 3 feet (914 mm) from the surface of the wall on which the glazing is installed and are provided on each floor above the first floor. The size and the dimensions of individual units shall not be limited in such installations except as required to meet structural loading requirements.~~

**~~2614.4.2.3 Area increase based on fire protection.~~** ~~In buildings or portions thereof protected by approved automatic, fire extinguishing systems, the area of glazing permitted by Section 2612.4.2.2.1 may be increased by 100 percent.~~

**~~2614.4.3 Exterior nonfire-rated wall panels.~~**

**~~2614.4.3.1 General.~~** ~~Approved plastic materials may be used as wall panels, in exterior walls not required to heave a fire rating subject to the requirements in this section.~~

**~~2614.4.3.1.1 Installation.~~** ~~Exterior wall panels installed as provided herein shall not alter the type of construction classification of the building.~~

**~~2614.4.3.1.2 Height limitation~~**~~. Approved plastics shall not be installed more than 75 feet (22.9 m) above grade level except as permitted by Section 2612.4.3.1.4 (Exception 3).~~

**~~2614.4.3.1.3 Area limitation and separation.~~** ~~Area limitation and separation requirements of exterior wall panels shall be provided in Table 2612.4.3.1.3.~~

**~~2614.4.3.1.4 Combination of glazing and wall panels.~~** ~~Combinations of plastic glazing and plastic wall panels shall be subject to the area, height and percentage limitations and separation requirements applicable to the class of plastics as prescribed for wall panel installations.~~

**~~Exceptions:~~**

1. ~~Structures which provide continuous architectural projections extending at least 36 inches (914 mm) from the surface of the wall in which plastic wall panels are installed shall not be required to provide vertical separation at that floor.~~
2. ~~Area increase based on in fire protection. In buildings or portions thereof protected by approved automatic fire extinguishing systems, the maximum percent area of plastic panes in exterior walls and the maximum square feet of separate panel are given in Table 2612.4.3.1.3 may be increased 100 percent but the area of plastic wall panels shall not exceed 50 percent of the wall area.~~
3. ~~Approved thermoplastic materials may be installed in areas up to 50 percent of the wall area of each story in structures less than 150 feet (45.7 m) in width if continuous architectural projections constitute an effective fire barrier extending at least 3 feet (914 mm) from the surface of the wall on which the panels are installed and are provided on each floor above the first floor.~~
4. ~~The use of plastics shall not be permitted in exterior walls in Group A, H and I occupancies.~~

**~~TABLE 2614.4.3.1.3~~**

**~~AREA LIMITATION AND SEPARATION REQUIREMENTS FOR PLASTIC WALL PANELS IN NONFIRE-RATED WALLS~~**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **~~FIRE SEPARATION (FT)~~** | | **~~CLASS OF PLASTIC~~** | **~~MAX. AGGREGATE AREA (% OF EXTERIOR WALL)~~** | **~~MAX. SEPARATED PANEL AREA (SQ FT)~~** | **~~MINIMUM SEPARATION OF PANELS (FT)~~** | | |
| **~~VERTICAL~~** | | **~~HORIZONTAL~~** |
| ~~10 up to and including 30.~~ | | ~~C1 C2~~ | ~~25 15~~ | ~~90 70~~ | ~~6 8~~ | | ~~4 4~~ |
| ~~Over 30~~ | | ~~C1 C2~~ | ~~50 50~~ | ~~no limit 100~~ | ~~3~~~~1~~ ~~6~~~~1~~ | | ~~0 3~~ |
| ~~For SI:  1 foot = 304.8 mm, 1 square foot = 0.0929 m~~~~2~~~~.~~ **~~Note 1~~**~~: See Exception 1 to Section 2612.4.3.1.~~ | | | | |

**~~2614.4.4 Roof panels.~~**

**~~2614.4.4.1 General.~~** ~~Approved plastic roof panels may be installed as follows.~~

**~~2612.4.4.1.1~~** ~~Where the roof is not required to have a fire rating.~~

**~~2614.4.4.1.2~~** ~~Where the roof panels meet the requirements for roof coverings of the particular occupancy.~~

**~~2614.4.4.1.3~~** ~~In roofs of buildings protected by an approved automatic fire-extinguishing~~ **~~limitations.~~** ~~Roof panels or units shall be limited in area, according to provisions set forth in Table system.~~

**~~Exception:~~** ~~The use of plastics shall not be permitted in roofs of Group A, H and I occupancies.~~

**~~2612.4.4.2 Separations.~~** ~~Individual roof panels shall be separated from each other by a distance of not less than 4 feet (1219 mm) measured in a horizontal plane.~~

**~~2614.4.4.3 Location.~~** ~~Where exterior wall openings are required to be fire rated, a roof panel or unit shall not be installed within 6 feet (1829 mm) of such exterior wall.~~

**~~2614.4.4.4 Area~~** ~~2612.4.4.4.~~

**~~TABLE 2614.4.4.4~~**

**~~AREA LIMITATIONS FOR ROOF PANELS~~**

|  |  |  |
| --- | --- | --- |
| **~~CLASS OF PLASTIC~~** | **~~MAX. SEPARATED PANEL AREA (SQ FT)~~** | **~~MAX. AGGREGATE AREA (% OF FLOOR AREA)~~** |
| ~~C1~~ | ~~300~~ | ~~30~~ |
| ~~C2~~ | ~~100~~ | ~~25~~ |

|  |
| --- |
| ~~For SI:  1 square foot = 0.0929 m~~~~2~~~~.~~ |

**~~2614.4.5 Skylight assemblies.~~** ~~Skylight assemblies may be glazed with approved plastic materials in accordance with this section.~~

**~~2614.4.5.1 Mounting.~~**

**~~2614.4.5.1.1~~** ~~The plastic shall be mounted a minimum of 4 inches (102 mm) above the plane of the roof on a curb constructed in accordance with requirements of types of construction.~~

**~~2614.4.5.1.2~~** ~~Dome-shape skylights shall rise above the mounting flange a minimum distance equal to 10 percent of the maximum span of the dome, but not less than 4 inches (102 mm).~~

**~~2614.4.5.1.3~~** ~~The edges of the skylights shall be protected by incombustible material in Types I, IV and V-B construction.~~

**~~2614.4.5.2~~** ~~Maximum area of skylight units. Each skylight unit shall have a maximum area within the curb of 100 square feet (9.3 m2) for Class C-2 material and 200 square feet (18.6 m2) for Class C-1 material.~~

**~~2614.4.5.3~~** ~~Aggregate area of skylights. The aggregate area of skylights shall not exceed 33 percent when Class C-1 materials are used and 25 percent when Class C-2 materials are used, of the floor area of the room or space sheltered by the roof in which they are installed.~~

**~~2614.4.5.4 Separation.~~** ~~Skylights shall be separated from each other by a distance of not less than 4 feet (1219 mm) measured in a horizontal plane.~~

**~~2614.4.5.5 Location.~~** ~~Where exterior wall openings are required to be fire rated, a skylight shall not be installed within 6 feet (1829 mm) of such exterior wall.~~

**~~Exceptions:~~**

1. ~~Skylight assemblies may not be glazed with approved plastic materials in buildings of Group H and I occupancies.~~
2. ~~The aggregated area of approved plastic skylights may be increased 100 percent beyond the limitations set forth herein if the skylights are used as an automatic fire venting system or if the building is equipped with an automatic fire extinguishing system.~~
3. ~~When a building not more than one story in height has a minimum distance separation from other buildings of 30 feet (9.1 m) and is not used as an enclosed means of egress, skylights in such a building need not comply with the requirements set forth in this paragraph.~~
4. ~~When skylights used in a building are made of approved plastic materials that meet the fire-rated requirements of the roof of the building, such skylight assemblies need not comply with the requirements set forth in this paragraph.~~
5. ~~Skylights installed in detached buildings of Group R3 occupancy, Types IV and III-B need not comply with this section.~~

**~~2614.4.6 Light diffusing systems.~~**

**~~2614.4.6.1 General.~~**

**~~2614.4.6.1.1~~** ~~Light diffusing systems shall not be installed in Group I and H occupancies or in exitways unless they are protected with an approved automatic fire extinguishing system.~~

**~~2614.4.6.1.2~~** ~~Approved plastic diffusers shall comply with the flame spread requirements for interior finishes, unless the individual plastic panels will fall from their mountings before igniting at an ambient temperature of at least 200°F (93°C) below their ignition temperature. The panels must, however, remain in place at an ambient room temperature of 175°F (79°C) for a period of not less than 15 minutes.~~

**~~2614.4.6.1.3 Location.~~** ~~Where fire-rated ceiling assemblies are required, plastic diffusers, if used, shall be located below such assemblies.~~

**~~2614.4.6.2 Installation.~~** ~~Plastic diffusers shall be supported directly or indirectly from ceiling or roof construction by use of incombustible hangers. Hangers shall be at least No. 12 Steel Wire Gage [0.0106 inch (0.27 mm)] galvanized wire or equivalent.~~

**~~2614.4.6.3 Size limitations.~~** ~~Individual panels or units shall not exceed 10 feet (3 m) in length or 30 square feet (2.8 m2) in area.~~

**~~2614.4.6.4~~** ~~When buildings are protected by an automatic fire extinguishing system, this section shall apply to light diffusing systems within such buildings.~~

**~~2614.4.6.4.1~~** ~~Fire-extinguishing systems shall be located above and below the light diffusing system unless specifically approved for above such system only.~~

**~~2614.4.6.4.2~~** ~~Areas of light-diffusing systems protected by a fire-extinguishing system shall not have to comply with the size limitations set forth in this section.~~

**~~2614.4.6.5 Electrical lighting fixtures.~~**

**~~2614.4.6.5.1~~** ~~Plastic light-transmitting panels and light-diffuser panels installed in product approval electrical lighting fixtures shall have flame spread ratings compatible with the occupancy of the building.~~

**~~2614.4.6.5.2~~** ~~The area of approved plastic materials when used in required fire exits or corridors shall not exceed 30 percent of the aggregate area of the ceiling in which they are installed, unless the occupancy is protected by an approved fire extinguishing system.~~

**~~2614.4.7 Partitions.~~** ~~Approved light-transmitting plastics may be used in or as partitions provided the requirement of the types of construction are met.~~

**~~2614.4.8 Bathroom accessories.~~** ~~Approved plastics shall be permitted as glazing in shower stalls, shower doors, bathtub enclosures and similar accessory units and shall conform to 16 CFR 1205 and the Safety Standard for Architectural Glazing Materials.~~

**~~2614.4.9 Awnings and similar structures.~~** ~~Approved lighttransmitting plastics may be used on or as awnings and similar structures when in conformance with provisions as set forth in other sections of this code.~~

**Chapter 27 – Electrical Systems**

(No Change)

**Chapter 28 – Mechanical Systems**

(No Change)

**Chapter 29 – Plumbing Systems**

(No Change)

**Chapter 30 - Elevators and Conveying Systems**

***Section 3001 – Elevators and Conveying Systems. Change Sections 3001 to read as shown:***

**3001.1 Scope**. This chapter governs the design, construction, installation, alteration, ~~and~~ repair and maintenance of elevators and conveying systems and their components.

**Note:** Other administrative and programmatic provisions may apply. See the Department of Business and Professional Regulation [DBPR] Chapter 399, Florida Statutes, and 61C-5, Florida Administrative Code. The regulation and enforcement of the following sections of the adopted codes, and their addenda, are preempted to the Bureau of Elevator Safety of the Department of Business and Professional regulation: ASME A17.1, ~~Part 8~~, ASME A17.3, ~~Sections 1.2, 1.5~~, **AND** ASME A18.1, ~~Part 10~~.

**3001.2 Referenced standards.** Except as otherwise provided for in this code, the design, construction, installation, alteration, repair and maintenance of elevators and conveying systems and their components shall conform to ASME A17.1/CSA B44, ASME A17.3 and ASME A18.1, ASME A90.1, ASME B20.1, ALI ALCTV, and ASCE 24 for construction in *flood hazard areas* established in Section 1612.3. The Division of Hotels and Restaurants may grant exceptions, variances and waivers to the *Elevator Safety Code* as authorized by the *~~Elevator Safety Code~~ Safety Code for Elevators and Escalators* (ASME A17.1, Section 1.2) and *Florida* Statutes (Chapter 120.)

**3001.3 Accessibility.** Passenger elevators are required to be accessible ~~or to serve as part of an~~ *~~accessible means of egress~~* ~~shall comply with~~ [~~Sections 1107~~](javascript:Next('./icod_ibc_2012_11_par047.htm');) ~~and~~ [~~1109.7.~~](javascript:Next('./icod_ibc_2012_11_par142.htm');)by the *Florida Building Code, Accessibility Chapter 11.*

**3001.4 Change in use.** A change in use of an elevator from freight to passenger, passenger to freight, or from one freight class to another freight class shall comply with Section 8.7 of ASME A17.1/CSA B44.

**3001.5 Design, installation and alteration of elevators.**

**3001.5.1**   Each new elevator shall comply with the *Florida Elevator Safety Code* that was in effect at the time of receipt of application for the construction permit for the elevator.

**3001.5.2**   Each alteration to, or relocation of, an elevator shall comply with the *Florida Elevator Safety Code* that was in effect at the time of receipt of the application for the construction permit for the alteration or relocation.

**3001.5.3**   All existing elevators shall comply with ASME A17.3

**3001.6** As used in this chapter, the term:

**ALTERATION.**  Any change to equipment, including its parts, components, and/or subsystems, other than maintenance, repair, or replacement.

**CERTIFICATE OF OPERATION** means a document issued by the department which indicates that the conveyance has had the required safety inspection and tests and that fees have been paid as provided in this Chapter 399, FS.

**CONVEYANCE.** An elevator, dumbwaiter, escalator, moving sidewalk, platform lift and stairway chairlift.

**DEPARTMENT.** For the purpose of this section, means the Department of Business and Professional Regulation.

**DIVISION.** For the purpose of this section, means the Division of Hotels and Restaurants of the Department of Business and Professional Regulation.

**ELEVATOR.** One of the following mechanical devices:

(a) A hoisting and lowering mechanism, equipped with a car and platform that moves in guide rails and serves two or more landings to transport material or passengers or both.

(b) An escalator, which is a power-driven, inclined continuous stairway used for raising or lowering passengers.

(c) A dumbwaiter, which is a hoisting and lowering mechanism equipped with a car of limited size which moves in guide rails and serves two or more landings.

(d) A moving walk, which is a type of passenger-carrying device on which passengers stand or walk and in which the passenger-carrying surface remains parallel to its direction of motion and is uninterrupted.

(e) An inclined stairway chairlift, which is a device used to transport physically handicapped persons over architectural barriers.

(f) An inclined or vertical wheelchair lift, which is a device used to transport wheelchair handicapped persons over architectural barriers.

**Exceptions:**

1. Personnel hoists and material hoists within the scope of ASME A10.
2. Man lifts within the scope of ASME A90.1.
3. Mobile scaffolds, towers, and platforms within the scope of ANSI A92.
4. Powered platforms and equipment for exterior and interior maintenance within the scope of ASME A120.1.
5. Conveyors and related equipment within the scope of ASME B20.1.
6. Cranes, derricks, hoists, hooks, jacks and slings within the scope of ASME B30.
7. Industrial trucks within the scope of ASME B56.
8. Portable equipment, except for portable escalators that are covered by this code.
9. Tiered or piling machines used to move materials to and from storage located and operating entirely within one story.
10. Equipment for feeding or positioning materials at machine tools and printing presses.
11. Skip or furnace hoists.
12. Wharf ramps.
13. Railroad car lifts or dumpers.
14. Line jacks, false cars, shafters, moving platforms and similar equipment used for installing an elevator by a contractor licensed in this state.
15. Automated people movers at airports.
16. Elevators in television and radio towers.
17. Hand-operated dumbwaiters.
18. Sewage pump station lifts.
19. Automobile parking lifts.
20. Equipment covered in Section 1.1.2 of the ~~Elevator Safety Code~~ *ASME A17.1 Safety Code for Elevators and Escalators*.
21. Elevators, inclined stairway chairlifts, and inclined or vertical wheelchair lifts located in private residences.

**ESCALATOR.** An installation defined as an escalator in the *Florida Building Code*.

**EXISTING INSTALLATION.** An installation defined as an “installation, existing” in the *Florida Building Code*.

**PRIVATE RESIDENCE.** A separate dwelling or a separate apartment in a multiple dwelling which is occupied by members of a single family.

***Section 3002 – Elevators and Conveying Systems. Change Sections 3002.4 to read as shown:***

**3002.4 Elevator car to accommodate an ambulance stretcher**. ~~Where elevators are provided in buildings four or more stories above, or four or more stories below, grade plane, at least one elevator shall be provided for~~ Any building that is more than three stories high or in which the vertical distance between the bottom terminal landing and the top terminal landing exceeds 25 feet, must be constructed to contain at least one passenger elevator that is operational for building occupants and fire department emergency access to all floors. The elevator car shall be of such a size and arrangement to accommodate an ambulance stretcher 24-inches by 76-inches (610 mm by 1950 mm) with not less than 5-inch radius corners in the horizontal, open position and shall be identified by the international symbol for emergency medical services (star of life). The symbol shall not be less than 3 inches (76 mm) high and shall be placed inside on both sides of the hoistway door frame.

***Add Section 3002.9 to read as shown***

**3002.9** Automatic fire alarm initiating devices shall be located and installed in accordance with ASME A 17.1 and NFPA 72.

***Section 3003 – Emergency Operations. Change Section 3003.3 to read as shown:***

**3003.3 Seven fire service elevator keys.** All elevators that operate in a building that is six or more stories in height shall be equipped to operate with ~~a~~ one of seven emergency response region elevator keys ~~standardized fire service elevator key~~ in accordance with the *~~International Fire Code.~~ Florida Fire Prevention Code.*

***Section 3004 – Hoistway Venting. Change Section 3004.3.1 to read as shown:***

**3004.3.1 Reduced vent area.** Where mechanical ventilation conforming to the *~~International~~ Florida Building Code, Mechanical ~~Code~~* is provided, a reduction in the required vent area is allowed provided that all of the following conditions are met:

1. The occupancy is not in Group R-1, R-2, I-1 or I-2 or of a similar occupancy with overnight *sleeping units*.

2. The vents required by Section 3004.2 do not have outside exposure.

3. The hoistway does not extend to the top of the building.

4. The hoistway and machine room exhaust fan is automatically reactivated by thermostatic means.

5. Equivalent venting of the hoistway is accomplished.

***Section 3005 – Conveying Systems. Change Section 3005.4 to read as shown:***

**3005.4 Personnel and material hoists.** Personnel and material hoists shall be designed utilizing an *approved* method that accounts for the conditions imposed during the intended operation of the hoist device. The design shall include, but is not limited to, anticipated loads, structural stability, impact, vibration, stresses and seismic restraint. The design shall account for the construction, installation, operation and inspection of the hoist tower, car, machinery and control equipment, guide members and hoisting mechanism. Additionally, the design of personnel hoists shall include provisions for field testing and maintenance which will demonstrate that the hoist device functions in accordance with the design. Field tests shall be conducted upon the completion of an installation or following ~~a major~~ *alteration* of a personnel hoist.

***Section 3007 – Fire Service Access Elevator. Change Section 3007.6 to read as shown:***

**3007.6 Hoistway enclosures.** The fire service access elevator hoistway shall be located in a *shaft enclosure* complying with  [~~Section 708~~](javascript:Next('./icod_ibc_2012_7_sec008.htm');)~~.~~ [Section 713](javascript:Next('./icod_ibc_2012_7_sec008.htm');).

***Section 3007 – Fire Service Access Elevator. Change Section 3007.7 to read as shown:***

**3007.7 Fire service access elevator lobby.** The fire service access elevator shall open into a fire service access elevator lobby in accordance with [Sections 3007.7.1](javascript:Next('./icod_ibc_2012_30_par051.htm');) through [3007.7.5.](javascript:Next('./icod_ibc_2012_30_par055.htm');)

**Exception:** Where a fire service access elevator has two entrances onto a floor, the second entrance shall be permitted to open into an elevator lobby in accordance with ~~Section 708.14.1.~~ Section 713.14.1.

***Section 3008 – Occupant Evacuation Elevators. Change Section 3008.1.2 to read as shown:***

**3008.1.2 Fire safety and evacuation plan.** The building shall have an *approved* fire safety and evacuation plan in accordance with the applicable requirements of Section 404 of the *~~International~~ Florida Fire Prevention Code*. The fire safety and evacuation plan shall incorporate specific procedures for the occupants using evacuation elevators.

***Florida Specific Amendment. Section 3008 – Occupant Evacuation Elevators***

**3008.1.2 Fire safety and evacuation plan.** The building shall have an *approved* fire safety and evacuation plan in accordance with the applicable requirements of Section 404 of the *~~International~~ Florida Fire Prevention Code*. The fire safety and evacuation plan shall incorporate specific procedures for the occupants using evacuation elevators.

***Section 3009 – Elevator Accessibility Requirements for the Physically Handicapped. Add Section 3009 to read as shown:***

**SECTION 3009**

**ELEVATOR ACCESSIBILITY REQUIREMENTS FOR THE PHYSICALLY HANDICAPPED**

**3009.1** In a building having any elevators that do not provide access to every floor level, elevator hallway call buttons on all main levels of ingress and on any floor that is commonly served by more than one group of elevators must be marked with Arabic and braille symbols that indicate floor levels to which access is provided. The symbols must be placed directly above each call button.

**3009.2** Each elevator car interior must have a support rail on at least one wall. All support rails must be smooth and have no sharp edges and must not be more than 1½ inches (38 mm) thick or 2½ inches (63 mm) in diameter. Support rails must be continuous and a minimum length of 42 inches (1067 mm) overall.

The inside surface of support rails must be 1½ inches (38 mm) clear of the car wall. The distance from the top of the support rail to the finished car floor must be at least 31 inches (787 mm) and not more than 33 inches (838 mm). Padded or tufted material or decorative materials such as wallpaper, vinyl, cloth or the like may be not be used on support rails.

**3009.3** A bench or seat may be installed on the rear wall of the elevator car enclosure, if the bench or seat does not protrude beyond the vertical plane of the elevator car enclosure wall when folded into a recess provided for the bench or seat and, when not in use, the bench or seat automatically folds into the recess. The bench or seat must be capable of supporting a live load of at least 250 pounds (113.4 kg) on any 12-inch by 12-inch (305 mm by 305 mm) area. A padded, tufted or other decorative material may not be used to cover the bench or seat; or may the bench or seat encroach on the minimum clear inside-car dimensions specified in this section.

This section applies only to elevators available for the transportation of the public. This section does not apply to elevators restricted by key or similar device to a limited number of persons in a building that has an elevator that otherwise meets the requirements of this section or to elevators used only for the transportation of freight. However, elevators that are used as freight and passenger elevators for the public and employees must comply with this section. This section does not apply to dumbwaiters or escalators.

This section supersedes all other state regulations and local ordinances and rules affecting the accessibility of passenger elevators to the physically handicapped, and the standards established by this section may not be modified by municipal or county ordinance.

***Section 3010 – Serial Numbers. Add Section 3010 to read as shown:***

**3010.1 Serial numbers.** Each elevator shall have a serial number assigned by the division or authority having jurisdiction  painted on or  attached to the elevator car in plain view and also to the driving mechanism. This serial number shall be shown on all required certificates and permits.

**3010.1.1.** Certificates of operation must be posted in a conspicuous location in the elevator and shall contain the text of Section 823.12, *Florida Statutes* relating to the prohibition against smoking in elevators. The certificate must be framed with a transparent cover.

**3010.1.2.** The designation “NO SMOKING” along with the international symbol for no smoking shall be conspicuously displayed within the interior of the elevator in the plain view of the public.

**3010.1.3.** The following ASME A17.1, rule is hereby amended to read as follows:

a. Rule 2.29.1 amend to add the following to the rule: "Each car in a multicar group shall be sequentially identified from left to right, as viewed from the elevator lobby."

b. Rule 2.7.3.1 of the ASME A17.1, which is amended to read as follows: “Rule 2.7.3.1 General Requirements. A permanent, safe and convenient means of access to elevator machine rooms and overhead machinery spaces shall be provided for authorized persons. The key to the machine rooms and overhead machinery spaces shall be kept on the premises at all times and readily available for use by State of Florida certified Elevator Inspectors.”

c. Rule 3.11.3 of ASME A17.3 is amended to read as follows:

**NOTE:** Updates to the Safety Code for Existing Elevators and Escalators ASME A17.1 and ASME A17.3 which require Phase II Firefighters’ Service shall apply except where section 399.02(9) Florida Statute states Phase II Firefighters' Service on elevators may not be enforced until July 1, 2015, or until the elevator is replaced or requires major modification, whichever occurs first, on elevators in condominiums or multifamily residential buildings, including those that are part of a continuing care facility licensed under chapter 651, or similar retirement community with apartments, having a certificate of occupancy by the local building authority that was issued before July 1, 2008. This exception does not prevent an elevator owner from requesting a variance from the applicable codes before or after July 1, 2015. This subsection does not prohibit the division from granting variances pursuant to s. 120.542, Florida Statute.

***Section 3011 – Electrolysis Protection for Underground Hydraulic Elevator Cylinders***

***Add Section 3011 to read as shown:***

**SECTION 3011**

**ELECTROLYSIS PROTECTION FOR UNDERGROUND HYDRAULIC ELEVATOR CYLINDERS**

**3011.1 Electrolysis protection for underground hydraulic elevator cylinders.**  All newly installed underground hydraulic pressure cylinders shall be encased in outer plastic containment to minimize electrolytic corrosion between the metal cylinder and ground cathode.

**3011.1.1** The plastic casing shall be capped at the bottom, and all joints must be solvent or heat welded to ensure water tightness.

**3011.1.2** The plastic casing shall be constructed of polyethylene or polyvinyl chloride (PVC). The plastic pipe wall thickness must not be less than 0.125 inch (3.175 mm).

**3011.1.3**  The neck of the plastic casing shall have a means of inspection provided to monitor the annulus between the pressurized hydraulic cylinder and the protective plastic casing.

**3011.1.4** Replacements of existing hydraulic cylinders shall be protected by the aforementioned method where existing physical dimensions permit.

***Section 3013 – Alterations to Electric and Hydraulic Elevators and Escalators. Add Section 3013 to read as shown:***

**SECTION 3012**

**ALTERATIONS TO ELECTRIC AND HYDRAULIC ELEVATORS AND ESCALATORS**

**3012.1 Alterations to electric and hydraulic elevators and escalators.** Alterations set forth in Part 8, ASME A17.1 to include any change to equipment, including its parts, components, and/or subsystems, other than maintenance, repair, or replacement; require an elevator construction permit, along with documented performance of inspections and tests to determine conformance with ASME A17.1.  A repair or replacement of equipment, parts, components or subsystems that requires inspection, tests and independent witnessing in other sections of ASME A17.1, A17.3  and A18.1 shall require an elevator construction permit.

**Chapter 31 – Special Construction**

***Section 3105 – Awnings and Canopies. Change Section 3105 to read as shown:***

**SECTION 3105**

**AWNINGS AND CANOPIES**

**3105.1 General.** *Awnings* or *canopies* shall comply with the requirements of Sections 3105.2 through 3105. ~~4~~  6 and other applicable sections of this code.

**3105.2 Definition.** The following terms ~~is~~ are defined in Chapter 2:

**AWNING**

**RETRACTABLE AWNING.**

**3105.3 Design and construction.** *Awnings* and *canopies* shall be designed and constructed to withstand wind or other lateral loads and live loads as required by Chapter 16 and in accordance with Section 3105.4 of this code with due allowance for shape, open construction and similar features that relieve the pressures or loads. Structural members shall be protected to prevent deterioration. *Awnings* shall have frames of noncombustible material, *fire-retardant treated wood*, wood of Type IV size, or 1-hour construction with combustible or noncombustible covers and shall be fixed, retractable, folding or collapsible.

**3105.3.1 Location.**

**3105.3.1.1** Fabric awnings and fabric-covered frames located over public property or in areas accessible to the general public shall be constructed so that no rigid part of such fabric awnings or fabric-covered frames shall be less than 7 feet 6 inches (2286 mm) from the grade directly below, and no part of the cloth drop shall be less than 7 feet (2134 mm).

**3105.3.1.2** A fixed fabric awning or fabric-covered frame shall not extend over public property more than two-thirds the distance from the property line to the nearest curb line in front of the building site as measured from the exterior face of the building, nor shall any portion be closer than 18 inches (457 mm) to the curb line.

**Exceptions:**

1. If installed over 14 feet (4267 mm) in height, it may occupy the entire width of the sidewalk.

2. Unless otherwise regulated by local zoning requirements.

**3105.3.1.3** Fabric-covered framework in whole or in part of fabric, erected in connection with gasoline service stations may not be erected within 15 feet (4572 mm) of where flammable liquids are transferred.

**3105.3.1.4** Movable fabric awnings or fabric covered frames may extend over public property for a distance of not more than 5 feet (1524 mm), provided such awnings or any part thereof maintain a clear height of 8 feet (2438 mm) above the sidewalk. All such movable awnings shall be supported on metal frames attached to the building.

**3105.3.1.5** Every fabric awning or fabric-covered frame shall be located as not to interfere with the operation of any exterior standpipe, stairway, fire escape or any means of egress to and from the building.

**3105.3.2 Area.** No fabric awning or fabric-covered frame shall exceed the area of the building to which it is attached.

**3105.3.3 Material.**

**3105.3.3.1** Fabric used for awnings or fabric-covered frames shall meet the flame propagation performance criteria of NFPA 701 or have a *flame spread index* not greater than 25 when tested in accordance with ASTM E 84 or UL 723.

**Exception:** Awnings or fabric-covered frames used in conjunction with Group R-3 occupancies.

**3105.3.3.3.2** Supports for fabric awnings and fabric-covered frame shall be of metal or similar durable material.

**3105.4 Design.**

**3105.4.1** Design of the framing members shall not be based on removal or repositioning of parts, or the whole, during periods of 75 mph wind velocity.

**3105.4.2** Design of the structural framing members shall be based on rational analysis, using the applicable wind loads of Chapter 16 as shown below:

**3105.4.2.1** The wind design loads for any fabric or membrane-covered structure designed with a quick removal or breakaway membrane or fabric at wind velocities of 75 mph, shall be based on the following criteria:

1. Minimum wind speed 105 mph

2. Exposure Category B, C or D as defined in Chapter 16.

**3105.4.2.2** The wind design loads for any fabric or membrane covered structure designed with a permanent or nonremovable fabric or membrane, shall be based on the following criteria:

1. Minimum wind speed velocity as required in Chapter 16 using Figure 1609C.

2.  Exposure B, C or D as defined in Chapter 16.

**3105.4.3** The fabric portions of awnings fabric covered frames shall be securely laced, tied or otherwise fastened to the frame; no rafter or front bar will be permitted in pockets; and in no case shall a rolling curtain be caused to operate over a canopy frame.

**3105.4.4** The horizontal projection of cantilevered portions shall not be greater than two times the height, except where the building construction does not permit a proper installation; in which case, variance may be permitted by the building official, based on special design and construction.

**3105.5 Rigid awnings and canopy shutters.**

**3105.5.1** Loads. Rigid awnings and canopy shutters shall be designed to resist the loads set forth in Chapter 16 of this Code except that structures or parts thereof which are intended to be removed or repositioned during periods of high wind velocity shall be designed in their open or extended position to design pressures based on a basic wind speed of minimum 115 mph, 3-second wind gust with applicable shape factors and to resist not less than 10 psf (478 Pa) roof live load.

**3105.5.2** Where such structure is intended to be folded or otherwise repositioned to close an opening when the building is unattended or act as a storm shutter, the design in the closed position shall also comply with Chapter 16 and shall be impact resistant in accordance with Section 1609.1.4.

**3105.5.3** Structures designed to be readily removed or repositioned during periods of high wind velocity shall be posted with a legible and readily visible decal or painted instructions to the owner or tenant to remove or reposition the structure or part thereof during such periods of time as are designated by the U.S. Weather Bureau as being a hurricane warning or alert.

**3105.6 ~~4~~  Canopy materials.** *Canopies* shall be constructed of a rigid framework with an *approved* covering that meets the fire propagation performance criteria of NFPA 701 or has a *flame spread index* not greater than 25 when tested in accordance with ASTM E 84 or UL 723.

***Section 3109 – Swimming Pool Enclosures and Safety Devices. Delete in its entirety and replace with the following text titled Structures Seaward of a Coastal Construction Control Line. Add Section 3109 to read as shown:***

**SECTION 3109**

**STRUCTURES SEAWARD OF A COASTAL CONSTRUCTION CONTROL LINE**

**3109.1 General.**

**3109.1.1 Scope.** The provisions of Section 3109 shall ensure that structures located seaward of the coastal construction control line are designed to resist the predicted forces associated with a 100-year storm event and shall apply to the following:

1.  All habitable structures which extend wholly or partially seaward of a coastal construction control line (CCCL) or 50-foot (15.3 m) setback line.

2.  Substantial improvement of or additions to existing habitable structures.

3.  Swimming pools that are located in close proximity to a habitable structure or armoring. An environmental permit from the Florida Department of Environmental Protection, requiring special siting considerations to protect the beach-dune system, proposed or existing structures and public beach access, is required prior to the start of construction. The environmental permit may condition the nature, timing and sequence of construction of permitted activities to provide protection to nesting sea turtles and hatchlings and their habitat, including review, submittal and approval of lighting plans.

**Exception:** The standards for buildings seaward of a CCCL area do not apply to any modification, maintenance or repair of any existing structure within the limits of the existing foundation which does not require, involve or include any additions to, or repair or modification of, the existing foundation of that structure.

**3109.1.2 Certification.** As part of the permit process and upon placement of the lowest horizontal structural member, the applicant shall submit to the building official certification of the elevation of the lowest horizontal structural member of the lowest floor as built in relation to National Geodetic Vertical Datum (N.G.V.D.). Said certification shall be prepared by or under the direct supervision of a registered land surveyor or professional engineer or architect and certified by same and be submitted prior to commencing any addition work. Any work undertaken prior to submission of the certification shall be at the applicant’s risk. The building official shall review the submitted elevation data, and any deficiencies found shall be corrected by the permit holder immediately and prior to any further work being permitted to proceed.

**3109.2 Definitions.** The following terms are as defined.

**ARMORING.** A manmade structure designed to either prevent erosion of the upland property or protect upland structures from the effects of coastal wave and current action. Armoring includes certain rigid coastal structures such as geotextile bags or tubes, seawalls, revetments, bulkheads, retaining wall or similar structures, but does not include jetties, groins or other construction whose purpose is to add sand to the beach and dune system, alter the natural coastal currents or stabilize the mouths of inlets.

**BREAKAWAY WALL.** A partition independent of supporting structural members that is intended to withstand design wind forces but to collapse from a water load less than that which would occur during a 100 year storm event without causing collapse, displacement or other structural damage to the elevated portion of the building or supporting foundation system.

**COASTAL CONSTRUCTION CONTROL LINE.** The line established by the State of Florida pursuant to Section161.053, Florida Statutes, and recorded in the official records of the county which defines that portion of the beach-dune system subject to severe fluctuations based on a 100-year storm surge, storm waves or other predictable weather conditions.

**DESIGN GRADE.** The predicted eroded grade caused by the 100-year storm.

**FIFTY-FOOT SETBACK LINE.** A line of jurisdiction, established pursuant to the provisions of Section161.052, Florida Statutes, in which construction is prohibited within 50 feet (15.13 m) of the line of mean high water at any riparian coastal location fronting the Gulf of Mexico or the Atlantic coast shoreline.

**HABITABLE STRUCTURE.** Structures designed primarily for human occupancy and are potential locations for shelter from storms. Typically included within this category are residences, hotels and restaurants.

**LOWEST HORIZONTAL STRUCTURE MEMBER.** Any shore-parallel structural member which supports floor, wall or column loads and transmits them to the pile foundation.

**ONE-HUNDRED-YEAR STORM ELEVATION.** The height of the breaking wave crest or wave approach as superimposed on the storm surge with dynamic wave set-up of a 100-year storm. This 100-year storm elevation is determined by the Florida Department of Environmental Protection based on studies published as part of the coastal construction control line establishment process and an analysis of topographic and other site specific data.

**REBUILDING.** See definition of “Substantial improvement.”

**SUBSTANTIAL IMPROVEMENT**. See Section 1612.

**3109.3 Elevation standards.** All habitable structures shall be elevated at or above an elevation which places the lowest horizontal structural member above the 100-year storm elevation as determined by the Florida Department of Environmental Protection in the report titled “One-Hundred-Year Storm Elevation Requirements for Habitable Structures Located Seaward of a Coastal Construction Control Line.”

An applicant may request the Department of Environmental Protection to determine a site-specific 100-year storm elevation for the applicant’s proposed habitable structure as part of the environmental permit application process. The elevation will be provided as part of the applicant’s environmental permit and shall be subject to review under the provisions of Chapter 120, Florida Statutes.

**Exceptions:**

1. Additions, repairs or modifications to existing nonconforming habitable structures that do not advance the seaward limits of the existing habitable structure and do not constitute rebuilding of the existing structure.

2. Habitable structures located landward of existing armoring which is capable of protecting buildings from the effects of erosion from a 100-year storm surge. The applicant shall provide scientific and engineering evidence that the armoring has been designed, constructed and maintained to survive the effects of the design storm and provide protection to existing and proposed structures from the erosion associated with that event. Evidence shall include a report with data and supporting analysis, and shall be certified by a professional engineer registered in this state, that the armoring was designed and constructed and is in adequate condition to meet the following criteria:

a. The top must be at or above the still water level, including setup, for the design storm plus the breaking wave calculated at its highest achievable level based on the maximum eroded beach profile and highest surge level combination, and must be high enough to preclude runup overtopping.

b. The armoring must be stable under the design storm including maximum localized scour, with adequate penetration and toe protection to avoid settlement, toe failure, or loss of material from beneath or behind the armoring.

c. The armoring must have sufficient continuity or return walls to prevent flanking under the design storm from impacting the proposed construction.

d. The armoring must withstand the static and hydrodynamic forces of the design storm.

3. A higher elevation standard is required by either the National Flood Insurance Program (NFIP), as found on a community’s Flood Insurance Rate Map (FIRM), or the local flood damage prevention ordinance. In such instances, the higher elevation standard shall apply.

**3109.4 Construction standards.**

**3109.4.1 Pile foundations.** All habitable structures shall be elevated on, and securely anchored to, an adequate pile foundation. Pile foundations for habitable structures shall be designed to withstand all reasonable anticipated erosion, scour and loads resulting from a 100-year storm including wind, wave, hydrostatic and hydrodynamic forces acting simultaneously with typical structural (live and dead) loads. All habitable structures should be anchored to their pile foundation in such a manner as to prevent flotation, collapse or lateral displacement. The elevation of the soil surface to be used in the calculation of pile reactions and bearing capacities for habitable structures shall not be greater than that which would result from erosion caused by a 100-year storm event. Calculation of the design grade shall account for localized scour resulting from the presence of structural components. Design ratio or pile spacing to pile diameter should not be less than 8:1 for individual piles located above the design grade. Pile caps shall be set below the design grade unless designed to resist increased flood loads associated with setting the cap above the design grade, but at or below the natural grade. Pile penetration shall take into consideration the anticipated loss of soil above the design grade.

**Exceptions:**

1. Additions, repairs or modifications to existing nonconforming habitable structures that do not advance the seaward limits of the existing habitable structure and do not constitute rebuilding of the existing structure.

2. Habitable structures located landward of existing armoring which is capable of protecting buildings from the effects of erosion from a 100-year storm surge. The applicant shall provide scientific and engineering evidence that the armoring has been designed, constructed and maintained to survive the effects of the design storm and provide protection to existing and proposed structures from the erosion associated with that event. Evidence shall include a report with data and supporting analysis, and shall be certified by a professional engineer registered in this state, that the armoring was designed and constructed and is in adequate condition to meet the following criteria:

a. The top must be at or above the still water level, including setup, for the design storm plus the breaking wave calculated at its highest achievable level based on the maximum eroded beach profile and highest surge level combination, and must be high enough to preclude runup overtopping.

b. The armoring must be stable under the design storm Including maximum localized scour, with adequate penetration and toe protection to avoid settlement, toe failure or loss of material from beneath or behind the armoring.

c. The armoring must have sufficient continuity or return walls to prevent flanking under the design storm from impacting the proposed construction.

d. The armoring must withstand the static and hydrodynamic forces of the design storm.

**3109.4.2 Walls below the 100-year storm elevation.** No substantial walls or partitions shall be constructed below the level of the first finished floor of habitable structures. All other walls shall be designed to break away.

**Exceptions:**

1. Stairways and stairwells;

2. Shear walls perpendicular to the shoreline;

3. Shear walls parallel to the shoreline, which are limited to a maximum of 20 percent of the building length in the direction running parallel to the shore;

4. Shear walls parallel to the shoreline, which exceed 20 percent of the total building length (including any attached major structure) when they meet the following criteria:

a. A certification is provided by a Florida-registered professional engineer that certifies that the increased length of shear walls, over 20 percent, are located landward of the 100-year erosion limit;

b. A hydraulic analysis is provided and certified by a Florida-registered professional engineer that evaluates the potential impact of flow increase on the subject parcel and adjacent properties;

c. The hydraulic analysis demonstrates that although the overall shearwall coverage is more than 20 percent, the increased shearwall length will not result in substantial increase of flow velocities and drag forces on the structural components of the proposed structure and neighboring structures; and

d. The provisions under Section 3109.4.2 (Exception 4) do not include any low-rise building as defined in Section 1609.2.

5. Wind or sand screens constructed of fiber or wire mesh;

6. Light, open lattice partitions with individual, wooden lattice strips not greater than 3/4 inch (19 mm) thick and 3 inches (76 mm) wide;

7. Elevator shafts;

8. Small mechanical and electrical rooms; and

9. Break-away or frangible walls.

**3109.5 Flood loads during a 100-year storm.**

**3109.5.1 Load basis.** The structural design shall be based on the 100-year storm as determined by the Florida Department of Environmental Protection in studies published as part of the coastal construction control line establishment process. Breaking, broken and nonbreaking waves shall be considered as applicable. Design wave loading analysis shall consider vertical uplift pressures and all lateral pressures to include impact, as well as dynamic loading and the harmonic intensification resulting from repetitive waves.

**3109.5.2 Hydrostatic load.** Habitable structures shall be designed in consideration of the hydrostatic loads which would be expected under the conditions of maximum inundation associated with a 100-year storm event. Calculations for hydrostatic loads shall consider the maximum water pressure resulting from a fully peaked, breaking wave superimposed on the design storm surge with dynamic wave setup. Both free and confined hydrostatic loads shall be considered. Hydrostatic loads which are confined shall be determined using the maximum elevation to which the confined water would freely rise if unconfined. Vertical hydrostatic loads shall be considered as forces acting both vertically downward and upward on horizontal or inclined surfaces of major structures (e.g., floors, slabs, roofs, walls). Lateral hydrostatic loads shall be considered as forces acting horizontally above and below grade on vertical or inclined surfaces of major structures and coastal or shore protection structures. Hydrostatic loads on irregular or curving geometric surfaces may be determined in consideration of separate vertical and horizontal components acting simultaneously under the distribution of the hydrostatic pressures.

**3109.5.3 Hydrodynamic loads.** Habitable structures shall be designed in consideration of the hydrodynamic loads which would be expected under the conditions of a 100-year storm event. Calculations for hydrodynamic loads shall consider the maximum water pressures resulting from the motion of the water mass associated with a 100-year storm event. Full-intensity loading shall be applied on all structural surfaces above the design grade which would affect the flow velocities.

**3109.6 Wind loads.** All habitable structures shall be designed in accordance with Chapter 16.

**3109.7 Swimming pools.** Swimming pools located in close proximity to an existing habitable structure or armoring shall be designed with an adequate pile foundation for the erosion and scour conditions of a 100-year storm event.

**3109.8 Storm debris.** All structures will be designed to minimize the potential for wind and water-borne debris during a storm.

***Section 3112 – Deposit of Material In Tidewater Regulated. Add Section 3112 to read as shown:***

**SECTION 3112**

**DEPOSIT OF MATERIAL IN TIDEWATER REGULATED**

**3112.1** It is not lawful for any person to discharge or cause to be discharged or deposit or cause to be deposited, in the tide or salt waters of any bay, port, harbor or river of this state, any ballast or material of any kind other than clear stone or rock, free from gravel or pebbles, which said clear stone or rock shall be deposited or discharged only in the construction of enclosures in connection with wharves, piers, quays, jetties or in the construction of permanent bulkheads connecting the solid and permanent portion of wharves. It is lawful to construct three characters of bulkheads for retention of material in solid wharves.

1. First, clear stone or rock enclosures, or bulkheads, may be built upon all sides to a height not less than 2½ feet (762 mm) above high watermark; and after the enclosures have been made so solid, tight and permanent as to prevent any sand, mud, gravel or other material that may be discharged or deposited in them from drifting or escaping through such enclosures, any kind of ballast may be discharged or deposited within the enclosures. The enclosures may be constructed of wood, stone and rock combined, the stone and rocks to be placed on the outside of the wood to a height not less at any point than 2½ feet (762 mm) above high watermark; and after the enclosures have been made so solid, tight and permanent as to prevent any sand, mud gravel or other material that may be discharged or deposited in them from drifting or escaping through such enclosures, any kind of ballast may be discharged or deposited within the enclosures.

2. Second, a bulkhead may be built by a permanent wharf consisting of thoroughly creosoted piles not less than 12 inches (305 mm) in diameter at the butt end, to be driven close together and to be capped with timber not less than 10 or 14 inches drift (254 or 302 mm), bolted to each pile, and one or more longitudinal stringers to be placed on the outside of the bulkhead and securely anchored by means of iron rods to piles driven within the bulkheads, clear rock to be on the inside of the bulkhead, to a height of not less than 2½ feet (762 mm) above high water; and after this is done, ballast or other material may be deposited within the permanent enclosure so constructed.

3. Third, a bulkhead may be constructed to consist of creosoted piles, as described herein, driven not exceeding 4 feet (1219 mm) apart from center to center, inside of which two or more longitudinal stringers may be placed and securely bolted to the piles. Inside of these longitudinal pieces, two thicknesses of creosoted sheet piling are to be driven, each course of the sheet piling to make a joint with the other to form an impenetrable wharf; and within this permanent bulkhead so constructed, any ballast or other material may be deposited.

4. No such enclosure, pier, quay or jetty shall be begun until the point whereat it is to be built shall have been connected by a substantial wharf with a shore or with a permanent wharf; except that the owners of wharves may at any time, with the consent of the Board of Pilot Commissioners of the Division of Professions of the Department of Business and Professional Regulation, build wharves of clear stone or rock, or creosoted walls as hereinafter provided, on each side of their wharves from the shore to a point at which the water is not more than 15 feet (4.6 m) deep, and when such walls have attained a height of 2½ feet (762 mm) above high watermark and have been securely closed at the deepwater end by stone or creosoted walls of the same height, any kind of ballast may be deposited in them.

5. Nothing contained in this section shall interfere with any rights or privileges now enjoyed by riparian owners. While this section empowers those who desire to construct the several characters of wharves, piers, quays, jetties and bulkheads provided for and described herein, nothing in this section shall be so construed as to require any person not desiring to construct a permanent wharf by filling up with ballast, stone or other material to construct under the specifications contained herein; and nothing in this chapter shall be so construed as to prevent any person from constructing any wharf or placing any pilings, logs or lumber in any waters where the person would have heretofore had the right so to do.

**3112.2** This section shall not prohibit Escambia County from placing in Pensacola Bay, on the Escambia County side, beside the old Pensacola Bay Bridge, certain materials, as recommended by the Department of Environmental Protection, in coordination with the Fish and Wildlife Conservation Commission, to increase the number of fish available for persons fishing from the old Pensacola Bay Bridge.

**3112.3** This section shall not prohibit Manatee County from placing in the Manatee County portions of Sarasota Bay and Tampa Bay and in the Manatee River, certain materials, as recommended by the Department of Environmental Protection, in coordination with the Fish and Wildlife Conservation Commission, to increase the number of fish available for persons fishing in the above areas.

**3112.4** This section shall not prohibit Pinellas County from placing in Tampa Bay certain materials as recommended by the Department of Environmental Protection, in coordination with the Fish and Wildlife Conservation Commission, to increase the number of fish available for persons fishing in the bay. Deposit of material on a wharf or quay is regulated. It is not lawful for any person to deposit or cause to be deposited on any wharf or quay, any ballast, stone, earth or like material, except such wharf or quay may be so secured as to prevent such ballast or other material from washing into the waters of the harbor.

***Section 3113 – Lighting, Mirrors, Landscaping. Add Section 3113 to read as shown:***

**SECTION 3113**

**LIGHTING, MIRRORS, LANDSCAPING**

**3113.1** Each operator of an automated teller machine that controls the access area or defined parking area to be lighted shall comply with Sections (2), (3), and (4) no later than one year after October 1, 1994. If the access area or defined parking area to be lighted is controlled by a person other than the operator, such other person shall comply with Sections (2), (3), and (4) no later than one year after October 1, 1994.

**3113.2** Each operator, or other person responsible for an automated teller machine pursuant to Sections 655.960 through 655.965, shall provide lighting during the hours of darkness with respect to an open and operating automated teller machine and any defined parking area, access area and the exterior of an enclosed automated teller machine installation, as follows:

1.There shall be a minimum of 10 footcandle (108 lux) power at the face of the automated teller machine and extending in an unobstructed direction outward 5 feet (1.5 m).

2.There shall be a minimum of 2 footcandle (21.5 lux) power within 50 feet (15.25 m) in all unobstructed directions from the face of the automated teller machine. If the automated teller machine is located within 10 feet (3 m) of the corner of the building and the automated teller machine is generally accessible from the adjacent side, there shall be a minimum of 2 footcandle (21.5 lux) power along the first 40 unobstructed feet (12 m) of the adjacent side of the building.

3.There shall be a minimum of 2 footcandle (12.5 lux) power in that portion of the defined parking area within 60 feet (18 m) of the automated teller machine.

4.The operator shall provide reflective mirrors or surfaces at each automated teller machine which provide the customer with a rear view while the customer is engaged in using the automated teller machine.

5.The operator, or other person responsible pursuant to Sections 655.960 through 655.965 for an automated teller machine, shall ensure that the height of any landscaping, vegetation or other physical obstructions in the area required to be lighted pursuant to Section (2) for any open and operating automated teller machine shall not exceed 3 feet (914 mm), except that trees trimmed to a height of 10 feet (3 m) and whose diameters are less than 2 feet (610 mm) and manmade physical obstructions required by statute, law, code, ordinance or other governmental regulation shall not be affected by this section.

***Section 3114– Airport Noise. Add Section 3114 to read as shown:***

**SECTION 3114**

**AIRPORT NOISE**

**3114.1 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, or

3.  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.

**Chapter 32 – Encroachments into the Public Right-of-Way**

(No Change)

**Chapter 33 – Safeguards During Construction**

***Section 3304– Site Work. Change Section 3304.1.4 to read as shown:***

**3304.1.4 Fill supporting foundations.** Fill to be used to support the foundations of any building or structure shall comply with Section 1804.5. *~~Special inspections~~* ~~of compacted fill shall be in accordance with Section 1704.7.~~

**Chapter 34 – Existing Buildings and Structures**

***Chapter 34 – Existing Structures. Change Sections 3401 – 3412 to read as shown:***

**SECTION 3401**

**GENERAL**

**3401.1 Scope.** ~~The provisions of this chapter shall control the~~ *~~alteration~~*~~,~~ *~~repair~~*~~,~~ *~~addition~~* ~~and change of occupancy of existing buildings and structures.~~ Alteration, repair, addition, relocation and change of occupancy of existing structures and buildings shall comply with the provisions of the *Florida Building Code, Existing Building.*

**~~Exception:~~** ~~Existing~~ *~~bleachers~~*~~, grandstands and folding and telescopic seating shall comply with ICC 300.~~  
  
**3401.2 – 3401.5** Reserved.

**SECTION 3402**

**DEFINITIONS**

**RESERVED**

**SECTION 3403**

**ADDITIONS**

**RESERVED**

**SECTION 3404**

**ALTERATIONS**

**RESERVED**

**SECTION 3405**

**REPAIRS**

**RESERVED**

**SECTION 3406**

**FIRE ESCAPES**

**RESERVED**

**SECTION 3407**

**GLASS REPLACEMENT**

**RESERVED**

**SECTION 3408**

**CHANGE OF OCCUPANCY**

**RESERVED**

**SECTION 3409**

**HISTORIC BUILDINGS**

**RESERVED**

**SECTION 3410**

**MOVED STRUCTURES**

**RESERVED**

**SECTION 3411**

**ACCESSIBILITY FOR EXISTING BUILDINGS**

**RESERVED**

**SECTION 3412**

**COMPLIANCE ALTERNATIVES**

**RESERVED**

**Chapter 35 – Referenced Standards**

***Add or change Referenced Standards to Chapter 35 to read as shown:***

**AAF Aluminum Association of Florida Inc.**

**3165 McCrory Place, Suite 185**

**Orlando, FL 32803**

Standard reference number Title Referenced in code section number

AAF-10 Guide to Aluminum Construction in High Wind Areas 2010 1622.1, 2002.4.1

**AAMA** American Architectural Manufacturers Association

1827 Walden Office Square, Suite 550

Schaumburg, IL 60173-4268

Standard reference number Title Referenced in code section number

101/I.S.2-97Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood

Windows and Glass Doors 1008.1.7, 1710.5.1, 1710.5.1.2, 2411.3.2.1

101/I.S.2/NAFS-02 Voluntary Performance Specifications for Windows, Skylights and Glass Doors

1710.5.1, 1710.5.1.2, 2614.2

AAMA/WDMA/CSA101/ North American Fenestration Standard/Specifications for Windows,

I.S.2/A440-05 or 08 or 11 Doors and Skylights 1710.5.1, 1710.5.1.2, 2405.5, 2614.2

AAMA 450-06 or ~~09~~ Voluntary Performance Rating Method for Mulled Fenestration Assemblies

or 10 1710.5.3

AAMA 501-94 or 05 Methods of Test for Exterior Walls 1710.5.4, 2411.3.2.1

AAMA 506-06 or 08 or 11 Voluntary Specifications for Impact and Cycle Testing of Fenestration Products 1609.1.2

AAMA 1402-86 or 09 Standard Specifications for Aluminum Siding, Soffit and Fascia 1404.5.1

AAMA/NPEA/NSA 2100-11 Voluntary Specifications for Sunrooms 202, 2002.6

**ACI**

American Concrete Institute

~~38800 Country Club Drive~~ P.O. Box 9094

Farmington Hills, MI ~~48331~~ 48333-9094

Standard reference number Title Referenced in code section number

530—11 Building Code Requirements for Masonry Structures 1405.6, 1405.6.1, 1405.6.2,

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**AF&PA**

American Forest & Paper Association

1111 19th St, NW Suite 800

Washington, DC 20036

Standard reference number Title Referenced in code section number

AF&PA—92   Wood Structural Design Data                        2314.4.7

AF&PA—05 Design Values for Joists and Rafters            2314.4.7

PWF--07 Permanent Wood Foundation (PWF) Design Specification   1805.2, 1807.1.4, 2304.9.5.2, 2314.4.7

AF&PA—12 Span Tables for Joists and Rafters 202, 2306.1.1, 2308.8, 2308.10.2, 2308.10.3,

2314.4.7, 2317.1.1

WCD 1—01    Wood Construction Data No. 1, Details for Conventional Wood Frame Construction        2314.4.7

WCD 4— 03 Wood Construction Data No. 4, Plank and Beam Framing for Residential Buildings      2306.1.2, 2314.4.7

WCD 5—89    Wood Construction Data No. 5, Heavy Timber Construction Details                                   2314.4.7

NDS—2012 National Design Specification (NDS) for Wood Construction with 2012 Supplement

722.1, 722.6.3.2, ~~1711.1.1~~, 1711.1.2, 1711.1.2.2~~1~~, 1809.12, 1810.3.2.4, Table 1810.3.2.6, 1905.1.9, 2302.1, 2304.12, 2306.1, 2306.2, Table 2306.2(1), Table 2306.2(2), Table 2306.3(1), Table 2306.3(2), 2307.1

**AHA**

American Hardboard Association

1210 West N.W. Highway

Palatine, IL 60067

Standard reference number Title Referenced in code section number

A135.4—04 Basic Hardboard 2314.4.1

A135.5—04 Prefinished Hardboard Paneling 2314.4.1

A135.6—98 Hardboard Siding 2314.4.1

A194.1—85 Cellulosic Fiber Board 2314.4.1

IB Spec. No. 1 Recommended Product and Application Specification —Structural Insulating

Roof Deck 2314.4.1

IB Spec. No. 2 Recommended Product and Application Specification —½ inch Fiberboard

Nail-Base Sheathing 2314.4.1

IB Spec. No. 3 Recommended Product and Application Specification —½ inch Intermediate

Fiberboard Sheathing 2314.4.1

**AISC**

American Institute of Steel Construction

One East Wacker Drive, Suite 700

Chicago, IL 60601-18021

Standard reference number Title Referenced in code section number

AISC Torsional Analysis of Steel Members 2214.3

AISC Detailing for Steel Construction 2214.3

AISC Engineering for Steel Construction 2214.3

AISC Iron and Steel Beams - 1873 to 1952 2214.3

AISC Serviceability Design Considerations for Low-Rise Buildings 2214.3

**AISI**

American Iron and Steel Institute

1140 Connecticut Avenue, Suite 705

Washington, DC 20036

Standard reference number Title Referenced in code section number

AISI S100-07/ North American Specification for the Design of Cold-formed Steel

SI-10 Structural Members, with Supplement 1, dated 2010 1604.3.3, 1905.1.9, 2203.1, 2203.2,

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AISI Design Manual for Structural Tubing 2214.3

AISI Specifications for Design of Light-Gage Cold-Formed Stainless Structural Members 2214.3

AISI Specification for the Criteria for Structural Application of Steel Cables for Buildings 2214.3

**AITC**

American Institute of Timber Construction

~~7012 S. Revere Parkway, Suite 140~~ 333 West Hampden Avenue

Englewood, CO ~~80012~~ 80110

Standard reference number Title Referenced in code section number

A 190.1—07 Structural Glued Laminated Timber 2303.1.3, 2306.1, 2314.4.2

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104—03 Typical Construction Details 2306.1, 2314.4.2

106 Code of Suggested Practices 2314.4.2

108—93 Standard for Heavy Timber Construction 2314.4.2

109—98 Standard for Preservative Treatment for Structural Glued Laminated Timber 2314.4.2

110—01 Standard Appearance Grades for Structural Glued Laminated Timber 2306.1, 2314.4.2

112—93 Tongue-and-Groove Heavy Timber Roof Decking 2314.4.2

113—10 Dimensions of Structural Glued Laminated Timber 2306.1, 2314.4.2

117—10 Standard Specifications for Structural Glued Laminated Timber of Softwood

Species—Design Requirements—Standard Specifications for Structural Glued

Laminated Timber of Softwood Species—Manufacturing Requirements 2306.1, 2314.4.2

119—96 Standard Specifications for Structural Glued Laminated Timber of

Hardwood Species 2306.1, 2314.4.2

**ANSI**

American National Standards Institute

25 West 43rd Street, Fourth Floor

New York, NY 10036

Standard reference number Title Referenced in code section number

A 41.1 Building Code Requirements for Masonry 2121.2.8

Z 53.1 American National Standard Safety Color Code for Making Physical Hazards 453.4.6, 453.14.6

Z 97.1—09 Safety Glazing Materials Used in Buildings-Safety Performance Specifications

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**APA**

APA - Engineered Wood Association

7011 So. 19th

Tacoma, WA 98466

Standard reference number Title Referenced in code section number

APA EWCG Engineered Wood Construction Guide, Form E30 2314.4.3

APA PDS—04 Panel Design Specification 2306.1, 2314.4.3

APA PDS Supplement 1—90 Design and Fabrication of Plywood Curved Panels (revised1995) 2306.1, 2314.4.3

APA PDS Supplement 2—92 Design and Fabrication of Plywood-lumber Beams (revised 1998) 2306.1, 2314.4.3

APA PDS Supplement 3—90 Design and Fabrication of Plywood Stressed-skin Panels (revised 1996)

2306.1, 2314.4.3

APA PDS Supplement 4—90 Design and Fabrication of Plywood Sandwich Panels (revised 1993) 2306.1, 2314.4.3

APA PDS Supplement 5—08 Design and Fabrication of All-plywood Beams (revised 2008) 2306.1, 2314.4.3

APA B840 Siding Manufacturing Specifications 2314.4.3

APA L350 Design/Construction Guide Diaphragms and Shearwalls 2314.4.3

APA PRP108 Performance Standards and Policies for Structural-Use Panels 2314.4.3

APA V910 Plywood Folded Plate Laboratory Report 21 2314.4.3

**APSP**

**Association of Pool and Spa Professionals**

2111 Eisenhower Avenue

Alexandria, VA 22314

Standard reference number Title Referenced in code section number

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

Spas 454.2.6.1

ANSI/APSP/ICC 4—12 American National Standard for Aboveground**/**On ground

Residential Swimming Pools . . . . . . . . . . . . . . . . . .. . . . . . . 454.2.6.1

ANSI/ APSP/ICC 5-11 American National Standard for Residential In ground Swimming

Pools……………………………………………………………. 454.2.6.1

ANSI/APSP/ICC 6—13 American National Standard for Portable Spas. . . . . . .. . . . . 454.2.6.1

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

Swimming Pools, Wading Pools, Spas, Hot Tubs, and Catch

Basins…………….…………………… 454.2.6.1, 454.2.6.3, 454.2.6.6, ~~3109.5~~

ANSI/APSP 16—11 American National Standard for Suction Fittings for Use in

Swimming Pools, Wading Pools, Spas, and Hot Tubs 454.1.6.5.10.2

**ASCE/SEI**

American Society of Civil Engineers

Structural Engineering Institute

1801 Alexander Bell Drive

Reston, VA 20191-4400

Standard reference number Title Referenced in code section number

5—11 Building Code Requirements for Masonry Structures 1405.6, 1405.6.1, 1405.6.2, 1405.10,

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6-11 Specification for Masonry Structures 1405.6.1, 1705.4, 1807.1.6.3, 2103.9, 2103.12,

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7-10                 Minimum Design Loads for Buildings and Other Structures (with Errata dated

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8—02 Specification for the Design of Cold-formed Stainless Steel Structural

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24-05 Flood Resistant Design and Construction 453.4.2, 1203.3.2, 1612.4, 1612.4.1,

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**ASHRAE**

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

1791 Tullie Circle NE

Atlanta, GA 30329-2305

Standard reference number Title Referenced in code section number

62—01 Ventilation for Acceptable Indoor Air Quality C502.1, E306.1

ANSI/ASHRAE/ASJHE 170—08 Ventilation of Heath Care Facilities 450.3.14, 450.3.14.4, 469.4.12.1

**ASME**

American Society of Mechanical Engineers

Three Park Avenue

New York, NY 10016-5990

Standard reference number Title Referenced in code section number

A 17.1/CSA B44—07 Safety Code for Elevators and Escalators-- with A17.1a/

CSA B44a-08Addenda and A17.1b-2009 Addenda 469.4.9.1, 907.3.3, 911.1.5, 1007.4, 1607.9.1, 3001.1,

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A 17.3—96 Safety Code for Existing Elevators and Escalators 469.4.9.1, 3001.1, 3001.2,

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A 90.1-09 Safety Standard for Belt Manlifts 3001.2, 3001.6

A112.19.8 Suction Fittings for Use in Swimming Pools, Wading Pools, spas, Hot Tubs,

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A120.1—01          Safety Requirements for Powered Platforms for Building Maintenance                  3001.6

B 20.1 - 09             Safety Standard for Conveyors and Related equipment                             3001.2, 3001.6,  3005.3

**ASTM**

ASTM International

100 Barr Harbor Drive

West Conshohocken, PA 19428-2959

Standard reference number Title Referenced in code section number

A 6/A 6M— 04a Specification for General Requirements for Rolled Steel, Structural Steel Bars,

Plates, Shapes, and Sheet Piling 2214.3

A 325—94 Specification for Structural Bolts, Steel, Heat-Treated, 120/105 Ksi

Minimum Tensile Strength 2214.3

A 361 Specification for Steel Sheet Zinc-Coated (Withdrawn) 2319.17.1.1

A 446 Specification for Steel Sheet, Zinc-coated (Galvanized) by the Hot-Dip Process,

Structural (Physical) Quality 1917.4.3

A 490—93 Specification for Heat-Treated, Steel Structural Bolts, 150 ksi

Minimum Tensile Strength 2214.3

A 525—87 Specification for General Requirements for Steel Sheet, Zinc-Coated

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A 611 Standard Specification for Structural Steel (SS), Sheet, Carbon, Coil-Rolled 1917.4.3

A 641 / A641M - 09a Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire 1506.5, 1506.6

A 653/A 653M—08 Specification for Steel Sheet, Zinc-Coated Galvanized or Zinc-Iron

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A 924 /A924M—08a Standard Specification for General Requirements for Steel Sheet,

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C 90—~~08~~ 11b Specification for Loadbearing Concrete Masonry Units 1506.7

C 332-09 Specification for Lightweight Aggregates for Insulating Concrete 1917.4.5

C 476-02 Standard Specification for Grout Masonry 2122.8.2

C 494/C494M-99 Standard Specification for Chemical Admixtures for Concrete 1917.4.4

C 495–99a Standard Test Method for Compressive Strength of Lightweight Insulating Table 1508.2,

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C 509-00              Elastomeric Cellular Preformed Gaskets and Sealing Material      2411.3.4

C 578—08b Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation Table 1508.2, 1917.4.10

C 618-12a Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan

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C 645—08a Specification for Nonstructural Steel Framing Members 2319.17.1.3, Table 2506.2, Table 2507.2

C 794—01 Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants 2415.4

C 796—97 Standard Test Method for Foaming Agents For Use in Producing Cellular

Concrete Using Performed Foam 1917.1.2, 1917.1.3, 1917.4.5

C 864-05              Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers   2411.3.4

C 869-11 Specification for Foaming Agents Used in Making Preformed Foam for Cellular

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C 920—08 Specification for Elastomeric Joint Sealants 2415.4, Table 2506.2, C405.1, E303.3.1

C 926—~~06~~ 11a Specification for Application of Portland Cement-Based Plaster [no change]

C 1036—01 Specification for Flat Glass 2411.1.2

C 1048—97b Standard Specification for Heat-Treated Flat Glass—Kind HS, Kind FT

Coated and Uncoated Glass 2411.1.5

C 1063-~~08~~ 12a Specification for Installation of Lathing and Furring to Receive Interior

and Exterior Portland Cement-based Plaster [no change]

C 1115-00            Dense Elastomeric Silicone Rubber Gaskets and Accessories        2411.3.4

C 1167—03 Specification for Clay Roof Tiles 1507.3.4, 1523.6.5.2

C 1225-08 (2012) Specification For Fiber-Cement Roofing Shingles, Shakes and Slates 1518.5.1

C 1314-07 Specification for Test Method for Compressive Strength of Masonry Prisms 2105.2.2.2.2,

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D 41—05 Specification for Asphalt Primer Used in Roofing, Dampproofing, and

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D 43-00 (2006) Specification for Coal Tar Primer Used in Roofing, Dampproofing, and Table 1507.10.2,

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D 92- 12b Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester 1519.2.2

D 226—06 Specification for Asphalt-saturated Organic Felt Used in Roofing and 1507.2.8, 1507.4.5.1,

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D 256—03 Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics 2614.2

D 312—00(2006) Specification for Asphalt Used in Roofing Table 1507.10.2, 1519.3, Table 1519.3A,

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D412—98a (2002)e1 Standard Test Methods for Vulcanized Rubber and Thermoplastic

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D 450—07 Specification for Coal-Tar Pitch Used in Roofing, Dampproofing, and

Waterproofing Table 1507.10.2, Table 1519.3B

D624—00e1 Standard Test Method for Tear Strength of Conventional Vulcanized Rubber

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D 638-03 Test Method for Tensile Properties of Plastics 2614.2

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D1621 Standard Test Method for Compressive Properties of Rigid Cellular Plastics 1523.6.5.2.17.1

D1622 Standard Test Method for Apparent Density of Rigid Cellular Plastics 1523.6.5.2.17.2

D1623 Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid

Cellular Plastics 523.6.5.2.17.3

D1761—06 Test Method for Mechanical Fasteners in Wood 1711.1.2, 1711.1.2.1, 1711.1.2.3, 2314.4.4

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D2126 Standard Test Method for Response of Rigid Cellular Plastics to Thermal

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D2240—03 Standard Test Method for Rubber Property—Durometer Hardness 2415.4

D2565—99(2008)Standard Practice for Xenon Arc Exposure of Plastics Intended for Outdoor

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D2626—04 Specification for Asphalt-Saturated and Coated Organic Felt Base Sheet

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D2856 Standard Test Method for Open-cell Content of Rigid Cellular Plastics

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D2898—04 Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood

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D 3498—03 Standard Specifications for Adhesives for Field-Gluing Plywood to Lumber Framing

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D3746—85 (2008) Test Method for Impact Resistance of Bituminous Roofing Systems 1504.7, 1515.2.4

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D4272—08a Test Method for Total Energy Impact of Plastic Films by Dart Drop 1504.7, 1515.2.4

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D5034—95 Standard Test Method for Breaking Strength and Elongation of Textile Fabrics

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D5957-98 Standard Guide for Flood Testing Horizontal Waterproofing Installation 1519.16.6

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D7147 – 11  Standard Specification for Testing and Establishing Allowable Loads of Joist Hangers    1711.1.1

D7158-08d Standard Test Method for Wind Resistance of Sealed Asphalt Shingles (Uplift Force

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E 331—00(2009) Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and

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E 1886·02 or 05 Standard Test Method for Performance of Exterior Windows. Curtain Walls. Doors.

and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials

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E 1996- 02, 05, Specification for Performance of Exterior Windows. Glazed

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F1346—91 (2003)Performance Specification for Safety Covers and Labeling Requirements for 454.1.3.1.9,

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F 1487 Standard Consumer Safety Performance Specification for Playground Equipment for Public Use 453.4.5, 453.10.5.2

F 1667—05 Specification for Driven Fasteners: Nails, Spikes and Staples Table 721.1(2)(3), 1506.5,

1507.2.6, 2303.6, Table 2506.2

G 53—96 Practice for Operating Light-and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials 454.2.17.1.15.2

G 60—01 Standard Practice for Conducting Cyclic Humidity Tests 2319.17.2.2.8

G 85 Standard Practice for Modified Salt Spray (Fog) Testing 1517.5.1, 1517.5.2, 1523.6.5.2.10,

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G 153 Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for

Exposure of Nonmetallic Materials 1504.6

G 155 – 05a Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of

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**AWPA**

American Wood Protection Association

P.O. Box 361784

Birmingham, AL 35236-1784

Standard reference number Title Referenced in section number

M4—08 Standard for the Care of Preservative-Treated Wood Products 1810.3.2.4.1, 2303.1.8, 2314.4.5

U1—11 Use Category System: User specifications for Treated Wood 1403.6, Table 1507.9.6, 1807.1.4,

1807.3.1, 1809.12, 1810.3.2.4.1, 2303.1.8, 2303.1.8.1,

2304.11.2, 2304.11.4, 2304.11.6, 2304.11.7, 2314.4.5

**AWS**

American Welding Society

550 N.W. LeJeune Road

Miami, FL 33126

Standard reference number Title Referenced in section numb

B2.1 Standard Welding Procedure and Performance Qualification 2214.3

C5.4 Recommended Practice for Stud Welding 2214.3

D1.1—04 Structural Welding Code—Steel 2214.3

D1.2 Structural Welding Code—Aluminum 2003.3

D1.3—98 Structural Welding Code—Sheet Steel Table 1705.2.2, 1705.2.2.1.1, 2214.3

D1.4—98 Structural Welding Code—Reinforcing Steel Table 1705.2.2, 1705.2.2.1.2, Table 1705.3,

~~2107.4,~~ 2214.3

D9.1 Specification for Welding of Sheet Metal 2214.3

D10.9 Standard for Qualification of Welding Procedures and Welders for Piping and Tubing 2214.3

**CPSC**

Consumer Product Safety Commission

4330 East West Highway

Bethesada, MD 20814-4408

Standard reference number Title Referenced in section number

Pub. No. 362 Safety Barrier Guidelines for Home Pools 454.1.3.1.9

**DECO**

Document Engineering Co., Inc.,

5210 Stagg Street

Van Nuys, California 9140

Standard reference number Title Referenced in code section number

ANSI Z 358.1-04 Emergency Eyewash and shower Equipment Table 450.3.18.1

**DOC/NIST**

U.S. Department of Commerce

National Institute of Standards and Technology

~~1401 Constitution Avenue NW~~ 100 Bureau Drive Stop 3460

~~Washington, DC 20230~~ Gaithersburg, MD 20899

Standard reference number Title Referenced in section number

CS236 Mat-Formed Particleboard 2314.4.6

PS-1-09 Construction and Industrial Plywood 2303.1.4, 2304.6.2, Table 2304.7(4), Table 2304.7(5),

Table 2306.2(1), Table 2306.2(2), 2306.3.2, 2314.4.6,

PS-2-10 Performance Standard for Wood Based Structural Use Panels 1809.1.1, 2211.3.1, 2303.1.4,

2304.6.2, Table 2304.7(5), Table 23062(1),

Table 2306.2(2), 2306.3.2, 2314.4.6

PS20-05 American Softwood Lumber Standard 2314.4.6

PS56 Structural Glued Laminated Timber 2314.4.6

**DOL/OSHA**

Department of Labor

Occupational Safety and Health Administration

~~c/o Superintendent of Documents~~ Frances Perkins Building

~~U.S. Government Printing Office~~ 200 Constitution Avenue, NW

Washington, DC ~~20402-9325~~ 20210

Standard reference number Title Referenced in section number

29 CFR 1910.1200 OSHA Hazard Communication Standard 202, 453.6.2

**DOTn**

Department of Transportation

c/o Superintendent of Documents

1200 New Jersey Avenue, SE

Washington, DC 20402-9325

Standard reference number Title Referenced in section number

14 CFR Part 150 (2005) The Aviation Safety and Noise Abatement Act of 1979 3114.1

**FCI**

Facility Guidelines Institute

1919 McKinney Avenue

Dallas, Texas 75201

www.fgiguidelines.org

Standard reference number Title Referenced in code section number

HHCF 10 Guidelines for Design and Construction of Health Care Facilities 449.2.2, 449.3.1, 449.3.2.1,

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**FINA**

Federation Internationale de Natation Amateur

Av. de l' Avant-Poste 4

1005 Lausanne

SWITZERLAND

Standard reference number Title Referenced in section number

CHG-22 FINA Handbook 1998-2000 454.1.2.2.1

FINA Handbook 2005-2009 454.1.2.7

**Florida Codes**

Florida Building Commission

Building Codes and Standards Office

Department of Business and Professional Regulation

1940 N. Monroe St., Suite 90A

Tallahassee, Fl. 32399-0772

Standard reference number Title Referenced in section number

FBC-A– Fifth Edition (2014) Accessibility 101.4.7, 202, 406.4.1, 419.9, 450.3.3.16, 450.3.11.8, 453.10.2.8.7,

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FBC-B– Fifth Edition (2014) Building 101.4.8, 102.1.1, 102.2.2, 117.1, 449.3.3.2, 449.3.3.4, 449.3.5.1, 449.3.10.2,

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FBC-EC– Fifth Edition (2014) Energy Conservation 1301.1.1

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FBC-FG– Fifth Edition (2014) Fuel Gas 454.2.1.2, 454.2.15, 455.3.7, 456.3.6.1

FBC-M– Fifth Edition (2014) Mechanical 454.2.1.2, 460.6.2, 460.7.2, 460.10.2, 3004.3.1, C502.1, E201

FBC- P– Fifth Edition (2014) Plumbing 110.3, 449.3.9.1, 450.3.7.2, 451.3.8.1, 452.2.15.1, 454.2.1.2, 454.2.3,

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FBC-R– Fifth Edition (2014) Residential 101.2, 105.15, 117.1

FFPC – Fifth Edition (2014) Florida Fire Prevention Code 101.4.5, 102.6, 307.1, 450.3.4.1.3, 453.1, 453.2.1, 453.3.2,

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TAS 301 1515.1.3

**FDOE**

Florida Office of Educational Facilities

1014 Turlington Building

325 West Gaines Street

Tallahassee, Florida 32399-0400

Standard reference number Title Referenced in section number

SREF Size of Space and Occupant Design Criteria 453.4.1, 453.8.2

SREF Life Cycle Cost Guidelines for Materials and Building Systems for Florida's

Public Educational Facilities 453.8.7

**FCI**

Facility Guidelines Institute

1919 McKinney Avenue

Dallas, Texas 75201

[www.fgiguidelines.org](http://www.fgiguidelines.org)

Standard reference number Title Referenced in code section number

HHCF

10  Guideline for the Design and Construction of Health Care Facilities 449.2.1.2, 449.2.2, 449.3.2,

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451.3.3.2.2, 451.3.3.3, 451.3.4, 451.3.5, 451.3.10

**FM**

Factory Mutual ~~Global Research~~

Standards Laboratories Department

~~1301 Atwood Avenue, P.O. Box 7500~~ 1151 Boston-Providence Turnpike

~~Johnston, RI 02919~~ Norwood, MA 02062

Standard reference number Title Referenced in section number

4470 (1992) Approval Standard for Class 1 Roof Covers 1504.7, 1515.1.1, 1515.2.4

4471 (1992) Approval Standard for Class I Panel Roofs 1515.1.1

**FRSA**

Florida Roofing, Sheet Metal and Air Conditioning Contractors Association

4111 Metric Drive

Winter Park, Florida 32792

Standard reference number Title Referenced in code section number

FRSA/TRI Florida High Wind Concrete and Clay Roof Tile 1507.3.2, 1507.3.3, 1507.3.3.1,

April 2012 (04-12) Installation Manual, Fifth Edition Revised 1507.3.6, 1507.3.7,1507.3.8, 1507.3.9

**FS**

Federal Specification

941 Jefferson Davis Highway, Suite 104

Arlington, VA 22202

Standard reference number Title Referenced in code section number

TTC 555B Test Specification for Wind Driven Rain Infiltration Resistance 1523.6.2.1.1

**GSA**

General Services Administration

1800 F Street, NW

Washington, DC 20405

Standard reference number Title Referenced in code section number

DD-G-451c (1977) Standard for Glass, Flat and Corrugated, for Glazing Mirrors

and Other Uses 2411.1.2

**IEEE**

Institute of Electrical and Electronics Engineers

2001 L Street, NW, Suite 700

Washington, DC 20036-4910

IEEE Appropriate standards for the type of equipment being protected 457.1.4.1.5, 449.3.15.5, 450.3.27.4

**IESNA**

Illuminating Engineering Society of North America,

120 Wall Street, 17th Floor,

New York, NY 10005-4001.

Standard reference number Title Referenced in code section number

ANSI/IESNA RP-28-07 Lighting and the Visual Environment for Senior Living …450.3.22.3

**MIA**

Marble Institute of America

28901 Clemens Road, Suite 100

Cleveland, OH 44145

Standard reference number Title Referenced in section number

MIA (1998) Appropriate standards for marble selection, cutting and design 460.6.4, 460.9.2

**NFPA**

National Fire Protection Association

1 Batterymarch Park

Quincy, MA 02169-7471

Standard reference number Title Referenced in section number

10—10 Standard for Portable Fire Extinguisher 449.4.2.10.2, 450.4.2.10.1.1, 450.4.2.10.2, 906.2, 906.3.2, 906.3.4, Table 906.3(1), Table 906.3(2)

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30—12 Flammable and Combustible Liquids Code 415.5, 468.3.6.5, 507.8.1.1.1, 507.8.1.1.2

70-11 National Electrical Code (NEC) 108.3, 415.10.1.8, 453.17.8, 453.25.5, 453.25.5.2,

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74-89 Standards for the Installation, Maintenance and Use of Household

Fire Warning Equipment 461.1

91-04 Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and

Noncombustible Particulate Solids 468.3.6.5

96-04 Standard for Ventilation Control and Fire Protection of Commercial

Cooking Operations . . . . . . . . . . . . . . . . . . . . . 466.6.2

99—~~10~~ 12 ~~Standard for~~ Health Care Facilities Code. . . .407.10, 449.3.14.1, 449.3.14.10, 450.3.19.1,

450.3.21.2, 450.3.26.1, 451.3.13.1, 451.3.15, 467.2.8.1,

469.4.11.1.1, 469.4.11.1.2, 469.4.14.1, 469.4.14.7.1, 469.4.14.9.3

101—12 Life Safety Code . . . . . . .405.4.2, 453.6.1, 453.14.2.1, 453.27.9.1, 453.27.10.1, 457.1.3.1.1,

457.1.4.1.1, 457.1.4.2.13, 457.1.4.13.2, 457.2.2.1.1, 457.1.4.13.2,

467.2.2.1, 467.2.2.5, 467.3.1, 467.3.2.1, 467.3.2.2, 469.3.1, 469.3.2,

469.4.14.10.1, 903.2.11.3.1, 710.5.2.2, 716.5.3.1, 909.20.4.1,1028.6.2

110—10 Emergency and Standby Power Systems 449.3.14.1, 449.3.14.10, 450.3.26.1, 451.3.13.1,

467.2.8.1, 469.4.14.9.2, 2702.1

111-10 Stored Electrical Energy Emergency and Standby Power Systems 469.4.14.9.2, 2702.1

701-10 Standard Methods of Fire Tests for Flame Propagation of Textiles and Films 3105.3.3, 3105.6.4

780—04 Installation of Lighting Systems . . 449.3.15.1, 450.3.27.1

790—04 Standard Test Methods for Fire Tests of Roof Coverings—

with Revisions through October 2008 1505.1, 1513.1, 2603.6, 2610.2, 2610.3

**NSF**

NSF International

P.O. Box 130140

789 N. Dixboro Road

Ann Arbor, MI 48113-0140, USA

Standard reference number Title Referenced in section number

NSF 50—11 Equipment for Pools, Spas, Hot Tubs, and Other Recreational 454.1.1, 454.1.2.1, 454.1.6.5.16,

Water Facilities 454.1.6.5.16.5, 454.1.9.2.5.2, 454.1.10.3

NSF 60—05 Drinking Water Treatment Chemicals -- Health Effects 454.1.2.1, 454.1.6.5.18

**RCSC**

Research Council on Structural Connections

c/o Stanley D. Lindsey & Assoc. Ltd.

2244 Metro Center Blvd., Suite 208

Nashville, TN 37228-1320

Standard reference number Title Referenced in section number

RCSC—88 Specification for Structural Joints Using ASTM A 325 or A 490 Bolts 2214.3

**SDI**

Steel Deck Institute

PO Box 25

Fox River Grove, IL 60021

Standard reference number Title Referenced in section number

DDM—03 Diaphragm Design Manual 2214.3, 2222.4

SDI-C-2011 Standard for Composite Steel Floor Deck Slabs 2210.1.1.3

**SJI**

Steel Joist Institute

~~1173B London Links Drive~~  234 W Cheves Street

~~Forest, VA 24551~~ Florence, South Carolina 29501

Standard reference number Title Referenced in section number

SJI—71 Structural Design of Steel Joist Roofs to Resist Ponding Loads, Technical Digest No. 3 2214.3

SJI—88 Vibration of Steel Joist-Concrete Slab Floors, Technical Digest No. 5 2214.3

SJI—03 Structural Design of Steel Joist Roofs to Resist Uplift Loads, Technical Digest No. 6 2214.3

SJI—83 Welding of Open Web Steel, Technical Digest No. 8 2214.3

SJI—87 Handling and Erection of Steel Joists and Joist Girders, Technical Digest No. 9 2214.3

SJI—02 Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders 2214.3

SJI—03 60 Year Steel Joist Manual 2214.3

**TECO**

Timber Company, Inc.

2402 Daniels Street

Madison, WI 53704

Standard reference number Title Referenced in section number

TECO PRP-133 Performance Standards and Policies for Structural Use Panels 2314.4.8

**TMS**

The Masonry Society

3970 Broadway, Unit 201-D

Boulder, CO 80304-1135

Standard reference number Title Referenced in section number

402-11/ACI 530/ASCE 5 Building Code Requirements for Masonry Structures 1405.6, 1405.6.1, 1405.6.2,

1405.10, 1604.3.4, , ~~1705.4, 1705.4.1~~, 1807.1.6.3, 1807.1.6.3.2, 1807.2.4, 1808.9, 2101.2.2, 2101.2.3, 2101.2.4, 2101.2.5, 2101.2.6, 2103.9, 2103.12, 2103.13, 2103.14, 2104.1, 2104.1.1, 2104.1.2, 2104.1.3, 2104.2, 2104.3, 2104.4, 2105.2.2.1, 2105.2.2.1.2, 2105.2.2.1.3, 2106.1, 2107.1, 2107.2, 2107.3, ~~2107.4~~, 2107.5, 2107.6,

2108.1, 2108.2, 2108.3, 2108.4, 2109.1, 2109.1.1, 2109.2, 2109.2.1, 2109.3, 2110.1, 2114.2, 2122.1, 2122.4, 2122.5, 2122.7, 2122.8.2, 2122.8.4, 2122.10

602-11/ACI 530/ASCE 6 Specification for Masonry Structures 1405.6, 1705.4, 1807.1.6.3, 2103.9, 2103.12,

2103.13, 2103.14, 2104.1, 2104.1.1, 2104.1.2, 2104.1.3,

2104.2, 2104.3, 2104.4, 2105.2.2.1.1, 2105.2.2.1.2, 2105.2.2.1.3, 2107.1, 2108.1, 2122.1, 2122.2.3,

2122.3, 2122.4, 2122.7.4, 2122.8.1, 2122.8.2, 2122.8.3, 2122.8.4, 2122.8.6, 2122.8.8

**TPI**

Truss Plate Institute

218 N. Lee Street, Suite 312

Alexandria, VA 22314

Standard reference number Title Referenced in section number

TPI 1—07 National Design Standard for Metal Plate Connected Wood

Truss Construction 2303.4.6, 2306.1, 2319.17.2.1.1, 2319.17.2.2.8

**UL**

Underwriters Laboratories

333 Pfingsten Road

Northbrook, IL 60062-2096

Standard reference number Title Referenced in section number

181—05 Standard for Factory-Made Air Ducts and Air Connectors 449.3.6.4, 454.3.6.3, 451.3.6.3.1, 451.3.6.3.4

790—04 Standard Test Methods for Fire Tests of Roof Coverings—with Revisions

through October 2008 1505.1, 1513.1, 1516.1, 2603.6, 2610.2, 2610.3

1069-07 Hospital Signaling and Nurse Call Equipment, 7th Edition 450.3.25, 451.3.11.1

1703-02 Flat-Plate Photovoltaic Modules and Panels—with Revisions

through April 2008 1507.17.1, 1509.7.4, 1518.11.1

2017-2008 Standards for General-Purpose Signaling Devices and Systems –

with Revisions through October 2009        406.8.5.1.1, 454.2.17.1.9, 3109.4.1.8

**WSTI**

Welded Steel Tube Institute, Inc.

2516 Waukegan Road, Suite 172

Glenview, IL 60025

Standard reference number Title Referenced in section number

WSTI (1974) Manual of Cold Formed Welded Structural Steel Tubing 2214.3

***Chapter 36 Florida Fire Prevention Code. Add to read as shown.***

***Chapter 36 Florida Fire Prevention Code***

***3601.1 Scope. Add to read as shown.***

**3601.1 Scope.** Provisions of this chapter shall govern the design, construction and arrangement of elements to provide a safe means of egress from buildings and structures and to minimize hazard to life and property due to fire and panic.

***3601.2 Add to read as shown.***

**3601.2** In addition to the provisions of this code, buildings shall comply with the 2013 *Florida Fire Prevention Code* as adopted by the Florida State Fire Marshal.

***Appendix B Board of Appeals. Change to read as shown.***

**APPENDIX B**

**CHAPTER 9B-52 F.A.C.**

**FLORIDA STANDARD FOR PASSIVE RADON-RESISTANT CONSTRUCTION**

**[See Appendix B of the 2010 FBC, Building]**

***Appendix C Group U – Agricultural Buildings. Change to read as shown.***

#### APPENDIX C:

#### 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 C1 ADMINISTRATION C101 General.

#### C101.1 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.”

#### C101.2 Intent.

#### C101.2.1 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.

#### C101.2.2 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.

#### C101.2.3 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.

#### C101.3 Scope.

#### C101.3.1 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.

#### C102 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 C3 of this standard, to be effective at the control of radon.

#### C103 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 C3 of this standard.

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| --- | --- | --- |
| CHAPTER C2 DEFINITIONS   C201 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.   C202 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 C3 TESTING C301 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.

#### C301.1 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).

#### C301.2 Acceptable devices and test periods. Selection of devices, operational devices, and test periods shall be in accordance with EPA 402-R-92-004.

#### C301.2.1 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 C4 STRUCTURAL SEALING AND HVAC SYSTEM BALANCING C401 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. C402 Sealing cracks and joints in concrete floors and walls.

#### C402.1 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 C402.2.

#### C402.2 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 C402.1.

#### C402.3 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 C405.1 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.

#### C402.4 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.

#### C402.5 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.

#### C402.6 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.

#### C403 Floors over crawlspace.

#### C403.1 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 C402.

#### C403.2 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.

#### 

#### C404 Combined construction types.

#### C404.1 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.

#### C404.2 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.

#### C404.3 Doors. When a door is located in a wall between a crawlspace and the conditioned space, it shall be fully weatherstripped or gasketed.

#### C405 Approved sealant materials.

#### C405.1 Sealants. Acceptable caulks and sealants shall conform with [ASTM C 920](javascript:vo();), *Standard* *Specifications for Elastomeric Joint* *Sealants,* and [ASTM C 962](javascript:vo();)*,* *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.

#### C406 Space conditioning and ventilation systems.

#### C406.1 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.

#### C406.1.1 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.

#### C406.2 Air distribution systems.

#### C406.2.1 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.

#### C406.2.2 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 C5 ENGINEERED SYSTEMS C501 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:

#### C501.1 Air pressure control. Indoor pressure may be elevated relative to subslab levels.

#### C501.2 Ventilation. An indoor air exchange rate may be maintained in a sufficient quantity to satisfy Section E502.1.

#### C502 Design criteria.

#### C502.1 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](javascript:vo();) Alternative. When these air quantities are not sufficient to maintain indoor concentrations below the acceptable level, other mitigation options shall be used.

#### C502.2 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.

#### C502.3 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 C6 SOIL DEPRESSURIZATION SYSTEMS C601 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 C603.1. Systems for buildings with off grade floors shall as minimum comply with Section C603.2 or C604. C602 Soil depressurization system installation criteria.

#### C602.1 Suction fans.

#### C602.1.1 Fan. Suction shall be provided by a fan, rated for continuous operation and having thermal overload with automatic reset features.

#### C602.1.2 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.

#### C602.1.3 Rating. The rating specific to system type shall apply (see Sections C603.1 and C603.2).

#### C602.1.4 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.

#### C602.1.5 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.

#### C602.2 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.

#### C602.3 Vents.

#### C602.3.1 Material. Piping material shall be of any type approved by locally adopted codes for plumbing vents.

#### C602.3.2 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.

#### C602.3.3 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.

#### C602.3.4 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.

#### C602.3.5 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.

#### C603 Soil depressurization system design criteria.

#### C603.1 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:

#### C603.1.1 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.

#### C603.1.2 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.

#### C603.1.3 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.

#### C603.1.4 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.

#### C603.2 Submembrane depressurization systems.

#### C603.2.1 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.

#### C603.2.2 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.

#### C603.2.3 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 C602.1, 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.

#### C603.2.4 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:

#### C603.2.4.1 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.

#### C603.2.4.2 Pipe size. Suction pipe shall be a minimum 3 inch (76 mm) diameter and shall be carried full size to the final termination point.

#### C603.2.4.3 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.

#### C604 Crawlspace ventilation.

#### C604.1 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.

#### C604.1.1 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.

#### C604.1.2 Plumbing. Plumbing located in the crawlspace shall be adequately protected from freezing by insulation or means other than restriction of ventilation air.

***Appendix E: Supplementary Accessibility Requirements. Replace to read as follows:***

**APPENDIX E**

**FLORIDA STANDARD FOR RADON-RESISTANT NEW COMMERCIAL CONSTRUCTION**

**CHAPTER E101**

**GENERAL**

**E101 General**. The design and construction requirements set forth in the following chapters and sections shall constitute and be known as the Florida Standard For Radon-Resistant Commercial Building Construction, hereinafter referred to as “this standard.”

**E102 Intent.** This standard was developed in accordance with Section 553.98, Florida Statutes, to minimize radon entry into newly constructed commercial buildings, in compliance with the state health standard. The design, construction, and operation of buildings are governed by a variety of codes, standards, guidelines, and regulations. Nothing in this standard is intended to create a conflict with existing health and life-safety regulations.

**E103 Scope.**

**E103.1 Applicability.** The provisions of this standard shall apply to the design and construction of new commercial buildings and additions to existing commercial buildings, except single family and multiple-family residential buildings of three or fewer stories above grade and those identified in Section E104.3. When adopted by county and local government, this standard shall be applied uniformly countywide. This standard shall not be modified by a local government or building-regulatory agency.

**E103.2 Additions**. When the cost of an addition to an existing building exceeds 50 percent of the current value of the building; only the addition must be brought into compliance with all applicable portions of this standard, as defined in Section E104.

**E104 Compliance.**

**E104.1 General.** Buildings designed and constructed in accordance with all the applicable provisions of this standard are deemed to comply.

**E104.2 New buildings and additions.** All new commercial buildings and additions to existing buildings shall meet the following compliance requirements of this standard:

1. Compliance with existing local building codes and Chapter 13 of *Florida Building Code, Building.*

2. Use of methods described in Chapters 3 and 4 of this standard.

**E104.3 Exemptions.** All buildings described below in Items 1 through 5 of this section are exempted from compliance with this standard. Buildings described in Item 6 are exempted from compliance with Sections E306 and E307, and Chapter 4 of this standard. Elevated buildings that comply with all provisions of Item 7 are exempted from compliance with other portions of this standard.

1. Temporary structures.

2. Free-standing greenhouses used exclusively for the cultivation of live plants.

3. Open-air reviewing stands, grandstands and bleachers.

4. Farm structures used only for storage or to shelter animals.

5. Residential buildings defined as one- or two-family detached houses or townhouse apartments with no more than three stories.

6. Buildings of occupancy classification S, storage, or H, hazardous (standard building code designations).

7. Elevated buildings that satisfy all the following conditions:

a. The structure shall be separated from the ground by a vertical separation, measured between the final grade and the lower surface of the floor, of at least 18 inches (457 mm);

b. All pilings, posts, piers or other supports shall be solid, or if hollow, shall be capped by a solid masonry unit or sealed at the surface of the soil with a construction complying with all applicable portions of Chapter 3 of this standard;

c. Enclosures of any kind, including but not limited to chases, storage rooms, elevator shafts and stairwells, that connect between the soil and the structure, shall comply with all applicable provisions of Chapter 3 and shall have a soil contact area of less than five percent of the projected building floor area; and

d. The perimeter of the structure, from the ground plane to the lower surface of the lowest floor, shall be totally open for ventilation.

**E104.4 Required documentation.** In order to comply with this standard, all structures must include in the construction documents provided for permitting, a summary of the radon-resistant design strategies being implemented in the structure. Additionally, the building owner shall be provided with a manual substantiating the radon resistance features. This manual shall include: a summary of the radon-resistant design strategies incorporated into the structure; a listing of the design specifications for all relevant motor-driven systems; a maintenance schedule for maintaining design specifications, including active soil depressurization and heating, ventilating, and air conditioning systems; and a listing of all critical adjustments, such as intake-air damper settings.

**CHAPTER E201**

**DEFINITIONS**

**E201 General.** For the purpose of this standard, certain abbreviations, terms, phrases, words and their derivatives shall be construed as set forth in this chapter. 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*; and *Florida Fire Prevention Code*. Words not defined in these codes shall have the meanings in Webster’s Ninth *New Collegiate Dictionary*, as revised. When cited throughout this standard, ASTM and ACI standards refer to the latest editions.

**E202 Definitions.**

**ACTIVE SOIL-DEPRESSURIZATION.** The lowering of air-pressure in the soil, relative to the atmospheric pressure immediately above ground level.

**ACTIVE SOIL-DEPRESSURIZATION SYSTEM.** A system designed to lower the air-pressure in the soil beneath a building, relative to the atmospheric pressure immediately above ground level, by continuously withdrawing air from below a membrane covering the soil. An active soil-depressurization system consists of a pressure distribution manifold, one or more radon vents, an operating fan, and a fan-failure indicator.

**ADDITION.** An extension or increase in floor area that can be occupied or that exchange air with the conditioned space of the building.

**AND/OR.** When referring to a choice of two or more provisions of this standard, signifies that use of any one provision is acceptable, and that two or more provisions may also be used together.

**APPROVED**. Accepted by the building official or other authority having jurisdiction.

**AREA.** The maximum horizontally projected area of a building or space, measured to the outside surface of the enclosing walls.

**AUTOMATIC**. Self-acting, providing an emergency function without human intervention, and activated as a result of a predetermined event such as an interruption of air-flow, a change in air-pressure, or the loss of electrical supply.

**BACKER ROD.** See “Backup.”

**BACKUP**. A compressible material used in the bottom of sealant reservoirs to reduce the depth of the sealant, thus improving its shape factor. Backup also serves to support the sealant against sag or indentation while curing.

**BLEACHERS.** Tiered or stepped seating facilities without backrests in which an area of 3 square feet (.28 m2) or less is assigned per person.

**BUILDING.** Any structure that encloses a space used for sheltering any occupancy. Each portion of a building separated from other portions by a fire wall shall be considered as a separate building.

**BUILDING OFFICIAL.** The officer or other designated authority, or their duly authorized representative, charged with the administration and enforcement of building codes.

**BUTT JOINT.** A nonbonded plain, square joint, a keyed joint or a doweled joint between two members, where primarily movement is at right angles to the plane of the joint. Sealant in a butt joint will generally be in tension or compression, but not shear.

**CAVITY WALL.** A wall built of any combination of materials, so arranged as to provide a vertical air space within the wall.

**COMMERCIAL BUILDING.** A structure or building classified according to use by the standard building code as occupancy groups: A - Assembly, B - Business, E - Educational, F - Factory Industrial, I - Institutional, M - Mercantile, and R-Residential (except those already covered by the Florida Standard for Passive Radon-Resistant New Residential Building Construction).

**CONSTRUCTION JOINT.** The surface where two successive placements of concrete meet and are to be bonded; reinforcement is not interrupted and tie bars are used as required.

**CONTRACTION JOINT.** A formed or sawed groove in a concrete structure, extending normal to the surface and to a depth of at least one-fourth the thickness of a concrete element, for the purpose of creating a weakened plane that induces a crack as internal stresses develop due to drying shrinkage.

**CONTROL JOINT.** See “Contraction joint.”

**CRAWL SPACE.** The unconditioned space between the bottom surface of the lowest floor of a structure and the earth that is created when the lowest floor of the structure spans between structural supports rather than being directly supported by the earth beneath the floor.

**CURING.** For concrete, the maintenance of a satisfactory moisture content and temperature during its early stages so that desired properties may develop. For sealants, the maintenance of a satisfactory moisture content and temperature while the physical properties of the sealant are changed by chemical reaction.

**CURING COMPOUND.** A liquid that can be applied as a coating to the surface of newly placed concrete to retard the loss of water, or in the case of pigmented compounds, also to reflect heat so as to provide an opportunity for the concrete to develop its properties in a favorable temperature and moisture environment.

**DETERIORATION.** The physical manifestation of failure of a material or assembly (e.g., cracking, delamination, flaking, pitting, scaling) caused by environmental or internal autogenous influences during testing or service.

**DIFFUSION.** The movement of radon from areas of high concentration to areas of low concentration.

**ELASTOMERIC SEALANT.** A sealant whose macromolecular material returns rapidly to approximately its initial dimensions and shape after substantial deformation by a weak stress and release of the stress.

**EMANATION.** The gaseous elements produced by and given off from the radioactive disintegration of radium.

**EQUILIBRIUM.** The condition where the rate of decay of a radioactive parent isotope is exactly matched by the rate of decay of every intermediate daughter isotope.

**EXISTING.** As applied to a building or structure, one which was erected or permitted prior to the adoption of this standard.

**FIELD-MOLDED SEALANT.** A liquid or semisolid material molded into the desired shape in the joint into which it is installed.

**FOOTING.** That portion of the foundation of a structure which spreads and transmits load directly to the piles, or to the soil or supporting grillage.

**FOUNDATION WALL.** A wall below the first floor extending below the adjacent ground level and serving as a structural support for a wall, pier, column or other structural element.

**GASKET.** A deformable material clamped between essentially stationary faces to prevent the passage of air through an opening or joint.

**GRADE.** The top surface of the ground adjoining the exterior of a building.

**GRADE BEAM.** A reinforced concrete beam, usually at ground level, to form a foundation for the walls of a superstructure.

**GRANDSTANDS.** Tiered or stepped seating facilities where an area of more than 3 square feet (.28 m2) is provided for each person.

**GRANULAR SOIL.** A soil with an air permeability greater than or equal to l0-12 m2.

**GROUT.** A mixture of cementitious material and water, with or without aggregate, proportioned to produce a pourable consistency without segregation of the constituents.

**HIGH-RANGE WATER REDUCER.** A chemical admixture capable of reducing the water content of concrete at least 12 percent. This admixture shall conform to ASTM C 494 Type F and/or Type 0.

**HOLLOW MASONRY WALL**. A wall built of masonry units so arranged as to provide an air space within the wall.

**HONEYCOMB.** Voids left in concrete due to failure of the mortar to effectively fill the spaces among course aggregate particles.

**ISOLATION JOINT.** A nonbonded separation between adjoining parts of a structure, usually in a vertical plane, designed to allow relative movement in three directions in order to accommodate differential horizontal or vertical movement without the development of cracks elsewhere in the structure. May be either a butt joint or a lap joint, used to structurally separate the floor slab from other building elements.

**KEYED.** Fastened or fixed in position in a notch or other recess.

**KEYWAY.** A recess or groove in one lift or placement of concrete which is filled with concrete of the next placement, providing improved shear resistance at the joint.

**LAITANCE.** A layer of weak and nondurable material containing cement and fines from aggregates, brought by bleeding water to the outer surface of concrete.

**LAP.** The length by which one material overlays another at a lap joint.

**LAP JOINT.** A nonbonded joint in which the materials being joined override each other so that any movement of the materials is primarily parallel to the plane of the joint, putting sealants in shear rather than tension or compression. Formed slab joints that are not attached with a keyway are considered to be lap joints.

**MANUFACTURED SANDS.** Sands resulting from the crushing of rock, gravel or slag.

**MASONRY.** Construction composed of shaped or molded units, usually small enough to be handled by one person and composed of stone, ceramic brick or tile, concrete, glass, adobe, or the like.

**MASTIC.** A sealant with putty-like properties.

**MEMBRANE.** A flexible, continuous sheet. See also: “Membrane-forming,” “wring compound,” “Soil-gas-retarder membrane;” “Waterproofing membrane.”

**MEMBRANE-FORMING CURING COMPOUND**. A liquid material that, when applied over the surface of freshly placed concrete, forms a solid, impervious layer which holds the mixing water in the concrete.

**MIDRANGE WATER REDUCER.** A chemical admixture capable of reducing the water content of concrete from 6 to 15 percent. This admixture shall conform to ASTM C 494 Type A and/or Type F.

**NATURAL SANDS.** Sands resulting from the natural disintegration and abrasion of rock.

**NET-FREE AREA.** When referring to foundation vents, the area determined by multiplying the overall width and height of the object and subtracting the total area obstructed by any solid object, such as screen, mesh, louvers, and frame of the vent.

**OPEN AIR.** When referring to reviewing stands, grandstands and bleachers, indicates a seating facility in which the side toward which the audience faces is without an enclosing wall.

**PICOCURIES PER GRAM.** pCi/g, a measure of radioactivity corresponding to 0.037 radioactive disintegrations per second per gram of dry weight of a sample.

**PICOCURIES PER LITER**. pCi/L, a measure of radioactivity corresponding to 0.037 radioactive disintegrations per second per liter of volume.

**PLASTICIZER.** See “Midrange water-reducer.”

**POLYETHYLENE.** A thermoplastic high-molecular-weight organic compound often used in sheet form as a water-vapor retarder.

**POLYURETHANE SEALANT.** A building sealant consisting primarily of a polyurethane compound.

**POLYVINYL CHLORIDE.** A synthetic resin used in the manufacture of pipes and nonmetallic waterstops.

**PREFORMED SEALANT.** A sealant functionally preshaped by the manufacturer so that only a minimum of field fabrication is required prior to installation.

**PRESSURE SENSITIVE.** Capable of adhering to a surface without the application of additional adhesives when pressed against it.

**PSI.** Pounds force per square inch.

**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.

**RADON POTENTIAL.** A measure of the potential of soils at a building site for contributing to indoor radon concentrations.

**SEALANT.** Any material used to seal joints or openings against passage of solids, liquids, or gases.

**SHAFT.** A vertical opening extending through one or more stories of a building, for utilities, an elevator, dumbwaiter, light, ventilation, plumbing or electrical installation or a similar purpose.

**SHAPE FACTOR.** The relationship between the depth and width of a field-molded sealant.

**SOIL GAS-RETARDER MEMBRANE.** A durable, flexible and non-deteriorating material, installed in a continuous sheet to retard the pressure-driven flow of soil gas through elements of a structure.

**SOLID REINFORCED MASONRY.** Masonry construction in which mortar, grout or concrete completely fills all joints and voids and in which steel reinforcement is embedded in such a manner that the materials act together in resisting forces.

**STORY.** That portion of a building between the upper surface of a floor and the upper surface of the floor or roof next above.

**STRUCTURE.** That which is built or constructed. A structure may contain one or more buildings separated by fire-rated construction elements in accordance with prevailing building codes.

**SUBGRADE.** The soil prepared and compacted to support a structure.

**SUPERPLASTICIZER.** See “High-range water reducer.”

**SUPERSTRUCTURE.** All of that part of a structure that is above grade.

**TEMPORARY STRUCTURE.** A structure which is erected, occupied, and disassembled or otherwise removed from the site within a total time period of 90 calendar days or less.

**WATERPROOFING MEMBRANE.** A liquid sealing compound (e.g., bituminous and paraffinic emulsions, coal tar cut-backs, etc.) or nonliquid protective coatings (e.g., sheet plastics, etc.) used separately or together in a manner which renders the structural surface to which they are applied essentially impervious to water in either the liquid or vapor state.

**WATER-REDUCING ADMIXTURE.** A chemical additive to concrete conforming to ASTM C 94 capable of producing a reduction in mixing water or increase in flowability without causing undue set retardation or entrainment of air in the mortar or concrete.

**WATERSTOP.** A diaphragm used across a joint as a sealant, usually manufactured specifically to prevent the passage of water through joints in concrete structures.

**WORKING LEVEL (WL).** A measure of radioactive exposure equal to the total quantity of radon decay products in one liter of air that will result in the ultimate emission of 1.3 × 105 MeV (million electron volts) of energy from alpha particles. In perfect equilibrium, 1 WL equals 100 pCi/L (picoCuries per liter). It is often assumed that the air inside buildings is not in equilibrium, and that only half the radon daughters are moving freely in the air, while half are attached to dust or building surfaces. When this condition exists, an equilibrium ratio of 0.5 is said to exist. At an equilibrium ratio of 0.5, 1 WL = 200 pCi/L. For purposes of this standard, 1 WL is defined as equal to 200 pCi/L.

**ZONE.** That portion of a building in which the HVAC system is controllable from a single point.

**CHAPTER E301**

**CONSTRUCTION REQUIREMENTS FOR PASSIVE**

**CONTROLS**

**E301 General.** Construction to these standards will limit radon entry points through building floors, walls, and foundations and will limit mechanical depressurization of buildings, which can enhance radon entry. Structural radon barriers are primarily intended to stop the pressure-driven flow of soil gas through unsealed cracks and openings in the foundation and/or floor and into the building. Barriers can also be effective in controlling the diffusion of radon through materials and the emanation of radon from materials. An acceptable degree of redundancy and reliability is achieved only when these components are implemented as part of an integrated system of radon-resistance as prescribed by this standard. All structures shall be isolated from the soil by an approved structural barrier as defined by the applicable portions of this standard. No crack, joint, duct, pipe, conduit, chase or other opening in the building foundation or floor shall be allowed to connect soil gas to a conditioned space or to the interior space of an enclosed space that is either adjacent to, or connected to, a conditioned space.

**E302 Soil gas-retarder membrane.**

**E302.1 Membrane materials.** Acceptable soil gas-retarder membranes shall consist of a single layer of polyethylene, not less than 0.006-inch (6 mils) thick with a maximum perm rating of 0.3. Polyvinyl chloride (PVC), ethylene propylene diene ter polymer (EPDM), neoprene or other nondeteriorating, non-porous material may be used instead of polyethylene, provided the installed thickness of the alternate material has greater or equal tensile strength, resistance to water-vapor transmission, resistance to puncture, and resistance to deterioration determined in accordance with ASTM E 154. The membrane shall be placed to minimize seams and to cover all of the soil below the building floor.

**E302.2 Tape.** Tape used to install the soil-gas retarder shall have a minimum width of 2 inches (51 mm) and shall be pressure sensitive vinyl or other non-deteriorating pressure sensitive tape compatible with the surfaces being joined. Paper tape and/or cloth tape shall not be used for these purposes.

**E302.3 Mastic.** Mastic used to install the soil-gas retarder 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.

**E302.4 Installation.** The soil-gas retarder 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. In buildings incorporating the subslab portions of an active soil-depressurization system, the soil-gas retarder serves an important second purpose: to prevent mastic, cement or other materials from blocking the pressure distribution manifolds or pits.

**E302.5 Seams.** Seams between portions of the soil-gas retarder shall maintain a minimum of 12 inches (305 mm) of lap when concrete is placed. This may be accomplished by securing the lapped edges of the membrane with tape or mastic or using larger unsecured overlaps prior to placing concrete.

**E302.6 Slab edges and joints.** The soil-gas retarder shall fully cover the soil beneath the building floor. Where the slab edge is cast against a foundation wall or grade beam, the soil-gas retarder shall contact the foundation element, and shall not extend vertically into the slab more than one half of the slab thickness.

**E302.7 Penetrations.** At all points where pipes, conduits, reinforcing bars or other objects pass through the soil-gas-retarder membrane, the membrane shall be fitted to within 1/2 inch (12.7 mm) of the penetration and sealed to the penetration. When penetrations occur within 24 inches (610 mm) of a soil-depressurization-system mat or pit, the gap between the penetrating object and the soil-gas retarder shall be taped closed. When necessary, to meet this requirement, a second layer of the membrane, cut so as to provide a minimum 12-inch (305 mm) lap on all sides, shall be placed over the object and shall be sealed to the soil-gas retarder with a continuous band of tape.

**E302.8 Punctures, cuts and tears.** All damaged portions of the soil-gas-retarder membrane within 24 inches (610 mm) of any portion of a soil-depressurization-system mat or pit shall be sealed with tape or with a patch made from the same or compatible material, cut so as to provide a minimum 12-inch (305 mm) lap from any opening, and taped continuously about its perimeter.

**E302.9 Mastics.** Mastic may be used to join sections of soil-gas retarder to one another or to elements of the building foundation, or to seal penetrations in the soil-gas retarder, provided that mastic is kept at least 24 inches (610 mm) from any portion of a soil-depressurization-system mat or pit. Only tape may be used to seal the soil-gas-retarder membrane within 24 inches (610 mm) of a soil-depressurization-system mat or pit.

**E302.10 Repairs.** Where portions of an existing slab have been removed and are about to be replaced, a soil-gas-retarder membrane shall be carefully fitted to the opening, and all openings between the membrane and the soil closed with tape or mastic. Special care must be exercised to assure that mastic does not enter any portion of a soil-depressurization system located beneath the slab.

**E303 Concrete floors in contact with soil gas.**

**E303.1 General.** Concrete slabs supported on soil or spanning over exposed soil, that are used as floors for conditioned space or enclosed spaces adjacent to or connected to conditioned spaces, shall be constructed in accordance with the following provisions of Section E303.

**E303.2 Concrete for slabs.**

**E303.2.1 Compressive strength.** Design strength for all concrete mixes used in the construction of slab-on-grade floors shall be a minimum of 3,000 psi (21 MPa) at 28 days and shall be designed, delivered and placed in accordance with ASTM C 94.

**E303.2.2 Shrinkage control.** In order to limit the uncontrolled cracking of floor slabs, the concrete mix design, placing practices, and curing practices prescribed in this section shall be followed. All concrete slabs-on-grade or slabs spanning above exposed soil shall be designed, placed, finished, and cured in accordance with local governing codes and applicable portions of ACI 318, Building Code Requirements for Reinforced Concrete; ACI 302, Guide for Concrete Floor and Slab Construction; and if fiber-reinforced concrete is used, the recommendations of the ACI Committee 544, State of the Art Report on Fiber Reinforced Concrete. ACI 302 and 544 may not be incorporated by reference for design.

**E303.2.3 Mix design.** Mix design for all concrete used in the construction of slab-on-grade floors shall specify a maximum design slump not to exceed 4 inches (102 mm). On-site slumps shall not exceed 5 inches (127 mm) provided that the total water added to the mix, including plant, transit, and site added water, does not exceed the total following parameters:

1. For mixes using only natural sands, water content shall not exceed 275 pounds per cubic yard of concrete.

2. For mixes using manufactured sands, water content shall not exceed 292 pounds per cubic yard of concrete.

**E303.2.4 Slump and workability.** For concretes that do not contain midrange or high-range water reducers, concrete slump measured at the point of placement in accordance with ASTM C 172, shall not exceed 5 inches (127 mm). For concretes designed and mixed containing mid-range or high-range water reducers conforming with ASTM C 494, slump measured at the point of placement in accordance with ASTM C 172, shall not exceed 7 inches (178 mm) for mid-range and 8 inches (203 mm) for high-range water reducers.

**E303.2.5 Hot weather placing and finishing.** All concrete shall be placed and finished in accordance with the provisions of ACI 301, Specifications for Structural Concrete for Buildings. When necessary, provision for wind breaks, shading, fog spraying, sprinkling, ponding or wet covering with a light colored material shall be made in advance of placement, and such protective measures shall be taken as quickly as concrete hardening and finishing operations will allow.

**E303.2.6 Curing.** Concrete floors shall be cured by one of the means described below and shall not be subjected to loading until the architect or engineer has determined the slab to be structurally adequate for the loads imposed.

1. Concrete floor slabs shall be cured by covering the entire slab surface for a period of seven days with clean, ponded water.

2. Concrete floor slabs shall be cured by covering the entire slab surface for a period of seven days with a continuous mist or spray of clean, potable water.

3. Concrete floor slabs shall be cured by covering the entire slab surface for a period of seven days with an impermeable sheet material conforming to ASTM C 171.

4. Concrete floor slabs shall be cured by covering the entire slab surface with a liquid membrane-forming compound that conforms with ASTM C 309. Curing compounds shall be compatible with materials specified in Section E303.3.1.

**E303.3 Sealing of construction joints, penetrations, cracks, and other connections.**

**E303.3.1 Sealants.** Sealants shall be selected and installed in compliance with ASTM C 920, Standard Specification for Elastomeric Joint Sealants, and ASTM C 1193, Standard Guide for Use of Joint Sealants.

1. Sealant materials shall be compatible with the materials they join, including curing compounds and admixtures, and with materials that will be applied over them, including floor finishing materials.

2. Field-molded sealants shall be installed in sealant reservoirs proportioned, cleaned of laitance and prepared in accordance with the manufacturer’s recommendations. For elastomeric sealants, this generally requires the installation of a bond breaker or backer rod.

3. When the installed sealant is not protected by a finished floor or other protective surface, it shall be suitable to withstand the traffic to which it will be exposed.

4. Waterstops shall be preformed from polyvinyl chloride or other noncorrosive material and shall be selected and installed in compliance with ACI 504R

**E303.3.2 Joints.** All joints between sections of concrete floor slabs, between the floor slab and a wall or other vertical surface, or between a section of floor and another object that passes through the slab, shall be sealed to prevent soil gas entry in accordance with the provisions of this section. Joint design depends upon the amount and type of movement that the joint must withstand. Ideally, sealing should occur as late in the construction process as possible. No portion of any joint shall be covered or rendered inaccessible unless the seal has first been inspected and approved by the building official. All such joints shall be sealed prior to the structure being certified for occupancy.

1. Butt joints. All nonbonded butt joints shall be sealed to prevent radon entry using an elastomeric sealant or a waterstop specified above. The sealant reservoir shall be sufficiently large to prevent failure of the sealant or waterstop, but in no case shall the sealant reservoir be less than ¼ inch by ¼ inch (6.4 mm by 6.4 mm) in cross section

2. Lap joints. All nonbonded lap joints shall be sealed with either a field-molded or preformed elastomeric sealant or with a flexible waterstop as specified above. The lap joint shall be sufficiently large to prevent failure of the sealant or waterstop, but in no case shall the sealant reservoir be less than ½ inch by ½ inch (12.7 mm by 12.7 mm) in cross section.

3. Isolation joints. All nonbonded isolation joints shall be sealed with either a field-molded or preformed elastomeric sealant or with a flexible waterstop as specified above. Isolation joints shall be sufficiently large to prevent failure of the sealant or waterstop, but in no case shall the sealant reservoir be less than ½ inch by ½ inch (12.7 mm by 12.7 mm) in cross section.

4. Control or contraction joints. May be used to limit unplanned cracking of floor slabs. In locations where continued movement of the slab portions can be reasonably expected, flexible sealants must be installed in reservoirs complying with the requirements of above section on butt joints, or a flexible waterstop must be used.

5. Construction joints. All bonded construction joints shall be sealed to prevent radon entry using either a rigid or an elastomeric sealant or a waterstop as specified above. Where movement of the joint is not prevented by continuous reinforcing and tie bars, flexible sealants must be installed in reservoirs complying with the requirements of above section on lap joints, or a flexible waterstop must be used.

**E303.3.3 Cracks.** All cracks in concrete slabs supported on soil or spanning over exposed soil, that are used as floors for conditioned space or enclosed spaces adjacent to or connected to conditioned spaces, shall be sealed against radon entry in accordance with the provisions of this section and Section E303.3.1. Ideally, sealing should occur as late in the construction process as possible.

1. Cracks greater than ¼ inch (6.4 mm) wide; all cracks that exhibit vertical displacement; all cracks that connect weakened zones in the slab such as vertical penetrations or re-entrant corners; and, all cracks that cross changes in materials or planes in the structure, shall be sealed with a flexible field-molded elastomeric sealant installed in accordance with above section on isolation joints.

2. Cracks greater than 1/16 inch (1.6 mm) in width, that do not meet any of the conditions described in Item 1 above, shall be enlarged to contain a sealant reservoir not less than ½ inch by ¼ inch (12.7 mm by 6.4 mm) in cross-section along the entire length of the crack; and shall be sealed with a flexible, field-molded elastomeric sealant installed in accordance with above section on butt joints.

3. Cracks less than 1/16 inch (1.6 mm) in width, that do not meet any of the conditions described in Item 1 above, may be left unsealed.

**E303.3.4 Stakes, pipe penetrations and other small objects.** All objects that pass through the slab shall be sealed gas tight. A sealant reservoir, appropriately dimensioned to accommodate any differential movement between the object and the concrete, shall be formed continuously around the object, and the joint shall be sealed with a field molded elastomeric sealant as prescribed for isolation joints and in accordance with the provisions of Section E303.3.1. Where pipes or other penetrations are separated from the concrete by flexible sleeves, the sleeve shall be removed to provide bonding of the sealant to the object. Where stakes are used to support plumbing, electrical conduits or other objects that will penetrate the slab, the stakes shall be solid, non-porous and resistant to decay, corrosion and rust. Special care must be taken to avoid honeycombing between multiple or ganged penetrations.

1. Large utility service openings through the slab shall be sealed gas-tight. For slab-on-grade construction, this can be accomplished by fully covering the exposed soil with a vapor-retarder membrane, covered to a minimum depth of 1 inch with an elastomeric sealant. Alternatively, the opening may be closed with an expansive concrete or hydraulic cement to within ½ inch (12.7 mm) of the top of the slab, and the remaining ½ inch (12.7 mm) filled with an elastomeric sealant. When the opening connects to a crawlspace, the opening shall be closed with sheet metal or other rigid impermeable materials and sealed with an elastomeric sealant compatible with the materials and conditions.

2. For openings made through existing slabs, they must be sealed to meet the appropriate provisions of this section. If the opening is partially repaired with concrete, any resulting crack shall be sealed in accordance with the Section E303.3.3.

3. Any sump located in a habitable portion of a building and connecting to the soil, either directly or through drainage piping, shall be fined with a gasketed lid. The lid shall be attached so as to provide a gas-tight seal between the sump and the access space above.

**E304 Walls in contact with soil gas.**

**E304.1 General.** Walls separating below-grade conditioned space from the surrounding earth or from a crawlspace or other enclosed volume with an exposed earth floor shall be isolated from the soil by an approved structural baffler as described in Section E302 of this standard. Foundation walls consisting of cavity walls, or constructed of hollow masonry products or of any material in such a way as to create an air-space within the wall, shall be capped at the floor level of the first finished floor they intersect. The cap shall be either at least 8 inches (203 mm) of solid concrete or concrete filled block, or a cap that provides airflow resistance at least equal to the adjacent floor. No crack, honeycomb, joint duct, pipe, conduit chase or other opening in the wall shall be allowed to connect soil gas to a conditioned space or to an enclosed space adjacent to or connected to a conditioned space.

**E304.2 Materials.** Walls governed by the provisions of this section shall be constructed of reinforced concrete, or solid reinforced masonry construction.

**E305 Buildings with crawl spaces**.

**E305.1 General.** For the purpose of this standard, buildings with crawl spaces include all buildings with the floor supported above grade.

**E305.1.1 Reinforced concrete floor systems.** A reinforced concrete floor constructed over crawl spaces shall conform to all applicable provisions of Section E304.

**E305.1.2 Wood-framed floor systems**. Wood-framed floors spanning over soil that are used as floors for conditioned space, or enclosed spaces adjacent to or connected to conditioned spaces, shall be constructed in accordance with the provisions of this section.

**E305.2 Materials.** Wood-framed floors constructed over a crawl space shall be constructed of American Plywood Association (APA) certified tongue-in-groove plywood, and otherwise comply with Paragraph 4.1.2 of Appendix C to Chapter 13 of the *Florida Building Code, Building*. Oriented structural board shall not be an acceptable substitute material.

**E305.3 Utility penetrations.** All penetrations through the floor, including but not limited to plumbing pipes and wiring, shall be fully sealed to the floor structure with approved sealant materials as per Section E303.3.1. Large service openings through the slab, such as beneath bath tub drains, shall be sealed gastight. Where large openings are created, sheet metal or other rigid materials shall be used in conjunction with sealants to close and seal the openings.

**E305.4 Vertical joints.** All vertical joints between the subfloor and foundation wall or the subfloor and any vertical plane of the building which extends from the crawlspace to the top of the subfloor shall be sealed with an approved sealant (see Section E303.3.1).

**E305.5 Doors and service openings.** Doors, hatches or removable closures of any kind that can create an opening in the floor-plane should be avoided, but when required, shall be gasketed and installed with a latch or other permanent fastening device.

**E305.6 Other radon-entry paths.** All openings which connect a crawlspace and construction cavities, such as the space between wall studs, hollow masonry or precast concrete units, or floor and ceiling planes, shall be closed and sealed with an approved sealant (see Section E303.3.1).

**E305.7 Crawl space ventilation.** Crawl spaces shall be passively ventilated or shall be constructed with an active soil-depressurization system in compliance with Chapter 4. No portion of an air distribution system shall pass through a crawlspace.

**E305.7.1 Required ventilation.** Crawl spaces shall be ventilated by openings through the perimeter wall connecting to the exterior of the foundation. Required vents shall have a combined net free area not less than 1 square inch (.000645 m2) per 1 square foot (.0929 m2) of crawl space, and shall conform to the following conditions:

1. Openings shall be distributed uniformly around the outside walls of the crawl space.

2. Vents shall be fitted with corrosion and decay-resistant wire mesh or grilles with openings not less than ¼ inch (6 mm) nor more than ½ inch (12.7 mm) in size. Vents shall not be fitted with operable louvers, dampers, or other closure mechanisms.

3. Plumbing located in a ventilated crawlspace shall be protected from freezing with insulation and/or heat tape.

**E305.7.2 Prohibited uses.** Crawl spaces shall not be used as an air-duct or plenum or to house any duct or fan that is part of a heating, ventilating or air-conditioning system.

**E306 Space conditioning systems and ventilating.**

**E306.1 General.** All heating, ventilating and air-conditioning systems shall be designed, installed, inspected and maintained in accordance with ANSI/ASHRAE 62-1989, Ventilation for Acceptable Indoor Air Quality, Chapter 13 of the Florida Building Code, Building, and with the provisions of this section. Construction to the provisions of this section will limit radon entry points through mechanical depressurization of buildings, which can enhance radon entry. Additionally, ventilating systems shall be designed to meet all applicable codes and the provisions of this section for use of outside air of low radon concentration.

**E306.2 Condensate drains**. All joints in condensate piping shall be solvent welded, soldered, or otherwise connected in a leakproof and gas-tight manner. Condensate drains shall be trapped and terminate in the building sewer or outside the building, a minimum of 6 inches (152 mm) above finished grade. If the condensate piping penetrates a floor or wall separating enclosed space from the soil or from a crawl space, the penetration shall be sealed in accordance with the applicable provisions of Chapter 3. The condensate drain piping shall not terminate in a return plenum.

**E306.3 Other piping.** When any piping penetrates a floor or wall separating enclosed space from the soil or from a crawl space, the penetration shall be sealed in accordance with the applicable provisions of Chapter 3. In the case of insulated piping, the insulation must be removed at the point of the seal and required seal must be made between the pipe and the building structure. Sealant must be compatible with the materials and anticipated operating temperatures. Piping shall not terminate in a return plenum.

**E306.4 Plumbing and wiring chases.** Wherever piping or wiring is installed in a chase that is at any point in contact with the soil or a crawl space, the chase shall be sealed to the floor or wall where it first enters the structure, in accordance with the applicable portions of Chapter 3. Piping contained in such a chase shall be sealed to the chase at the interior plane of that floor or wall. No portion of any chase shall terminate in a return air duct or plenum. Where it is impractical or prohibited by another code to seal wiring into an electrical chase or conduit, the chase shall comply with all applicable portions of Chapter 3 or the conduit shall be entirely fabricated of gas-tight components and materials.

**E307 Air distribution systems.**

**E307.1 Air distribution systems.** Any air duct, plenum, fan enclosure, or fan that is part of a building’s heating, ventilating or air-conditioning system shall be completely isolated from the soil gas by a structural barrier complying with the provisions of Chapter 3. Heating, ventilating, and air conditioning systems supplying spaces that have floors or walls in contact with soil or soil gas shall be designed to minimize air-pressure differences and eliminate negative pressures, that cause significant flow of soil gas through the structural barrier and into the building. Return ducts, plenums, and air handlers shall not be located in a crawl space.

**E307.2 Exhaust fans, hoods, equipment, and appliances.** For each zone, the required volume of outside ventilation air shall be equal to or greater than the combined volume of air capable of being exhausted by all exhaust fans, hoods, equipment, and appliances installed in the zone. This amount may not be reduced by use factors unless devices are wired and switched in a manner that prevents their simultaneous operation.

**E307.3 Combustion air ducts.** Ducts that provide combustion air to fuel-burning appliances and equipment shall be completely isolated from the soil-gas by a structural barrier complying with the provisions of Chapter 3.

**CHAPTER E401**

**ACTIVE SOIL-DEPRESSURIZATION SYSTEMS**

**E401 General.** A soil-depressurization system maintains a lower air pressure in the soil directly beneath the building floor and foundation than exists within the building. This not only draws radon away, but also causes the direction of the airflow through any possible failure in the structural barrier to be out of the building and into the soil-depressurization system. Soil depressurization systems may be installed beneath concrete slabs supported directly on the soil, or beneath the soil gas-retarder membrane in crawl spaces.

**E401.1 Prohibited uses.** Soil-depressurization systems components may not extend beneath areas that are required to be depressurized by other codes for the protection of public health, for example rooms containing general anesthesia, pathogens, or poisonous chemicals. Soil depressurization systems may be installed beneath rooms that are required to be depressurized for other reasons, such as toilets and kitchens.

**E402 System components.** An active soil-depressurization (ASD) system is comprised of the following components: pressure distribution system porous media or manifolds; a soil cover; one or more vents; a suction fan; and a system failure indicator.

**E402.1 Pressure distribution media or manifolds.** A wide variety of means can be utilized to extend the low-pressure zone across the entire area beneath the structure. Acceptable means include synthetic ventilation mats, a system of perforated pipe, and an air-permeable gravel layer. Different types of pressure distribution media may be used in the same system, provided each complies with the installation requirements of this chapter. Pressure distribution media must be installed is such a way as to assure that they are never blocked by water.

1. Ventilation mats shall have a soil contact area of at least 216 square inches (0.14 m2) per lineal foot and provide a cross-section profile of at least 9 square inches (.006 m2).

2. Perforated pipe may be used to construct pressure extension manifolds. These pipes may be installed directly under the soil cover or in gravel or a similar porous medium that provides an adequate airflow connection between the pipe and the subsoil and that protects the pipe from becoming blocked by soil.

3. Continuous gravel layers of at least 4 inches (102 mm) thick are an acceptable pressure distribution medium, provided they completely cover the area of soil to be depressurized.

**E402.2 Soil cover.** In slab-on-grade construction, the soil cover consists of the soil gas-retarder membrane and the concrete slab. In crawl spaces, the concrete slab may be omitted, providing the soil gas-retarder membrane will not be subjected to wear and damage due to required maintenance procedures. In all instances, the soil gas-retarder membrane shall be fully sealed to the radon vents in accordance with the provisions of Section E302.

**E402.3 Radon vents.** Radon vents are gas-tight pipes that carry the soil gas to an area above and away from the building. Radon vent pipes shall be of a material approved by the governing local building code for plumbing vents.

**E402.4 Suction fans.** Suction fans create the critical pressure difference between the subslab and indoors. Suction fans shall be designed for continuous operation. Fan performance is determined by the soil characteristics, the airflow characteristics of the pressure distribution system, and the system layout, and shall comply with the airflows and operating pressures determined by the system design, as determined using the large-building active soil-depressurization model, or with criteria below for alternate compliance method. The computer model program is available through the Department of Community Affairs, Codes and Standards, 2555 Shumard Oak Blvd. Tallahassee, Florida, 32399-2100, (850) 487-1824.

**E402.5 Fan-failure indicator.** Each soil-depressurization system shall have a failure indicator labeled with the words “RADON REDUCTION SYSTEM FAN-FAILURE INDICATOR” mounted so as to be conveniently visible to the building occupants. The fan-failure indicator may be either a visual device consisting of a light of not less than 1/5 footcandle (2 lux) at the floor level, or an alarm that produces a minimum 60 db audible signal. The indicator shall be made to operate automatically when the pressure inside any radon vent pipe fitted with an operable fan is less than 0.40-inch water column (100 pascals) lower than the air pressure inside the building.

**E403 ASD system design requirements.**

**E403.1 General.** All ASD systems must comply with a design shown by the large-building active soil-depressurization model to be capable of maintaining a 0.02-inch (5 pascal) pressure differential over 90 percent of the slab or crawlspace area.

**E403.2 Ventilation mat systems.** Mat systems may be designed and installed in accordance with a design shown by the large-building active soil-depressurization model to be capable of maintaining a 5-pascal pressure differential over 90 percent of the slab area or with Section 503.2.2.

**E403.2.1 Installation.** Radon ventilation mats shall be installed immediately prior to placing the soil gas-retarder membrane, to reduce the chance for soil to enter and block the mat. Mats shall be arranged in a pattern that provides at least two possible flow paths from any point on the mat to a radon vent pipe. Mats shall be placed with the filter material facing the compacted soil. Where sections of mat join, a minimum 6-inch (152 mm) long section of filter material at the end of one of the mats shall be loosened and the other piece of mat inserted between the loosened filter material and the first section of mat. The mats will be pressed tightly together at this lap and mechanically attached together with hog rings or metal pins driven through the mat and into the soil. Wire ties, which will puncture or tear the soil gas-retarder membrane, shall not be used to join the mats. When properly joined, the filter material will extend continuously across the joint and the full cross-sectional area of the mat will be preserved across the splice.

**E403.2.2 Alternate compliance method.** Systems installed on sand or granular soil, can demonstrate compliance by meeting the following design limits:

1. Mats shall be located at least 15 feet (4572 mm) and not more than 25 feet (7620 mm) from the outside edge of the floor.

2. Mats shall be spaced not more than 50 feet (15 240 mm) on center.

3. No portion of a building floor shall be isolated from a mat by a construction feature, such as an internal footing, grade beam, foundation wall, or other obstacle having a depth greater than the exterior foundation walls.

4. No portion of a building floor shall be more than 35 feet (10 668 mm) from a mat.

5. Mats shall be run parallel to the longest slab dimension unless obstructed by a construction feature, and arranged in a pattern that provides at least two possible flow paths from any point on the mat to a radon vent pipe.

**E403.2.3 Radon vent connection.** The radon vent pipe shall join to the mat in a manner that does not restrict the full air-flow capacity of the pipe. Depending upon the thickness and effective net-free area of the ventilation mat, this may require enlarging the diameter of the vent pipe at the connection with a suitable flange, or increasing the net-free area of the mat by installing additional layers of mat or a layer of gravel beneath the connection point. The soil gas-retarder membrane shall be fully sealed to the radon vents in accordance with the provisions of Section 302.

**E403.3 Perforated pipe systems.** Perforated pipes shall be of a material approved by the governing local building code for foundation drainage, and sized according to the air-flow estimated from the large-building active soil-depressurization model. Where perforated pipes are installed in gravel meeting ASTM D 448, numbers 4 or 5 gravel, with not more than 5 percent passing a 3/8 inch (10 mm) screen.

**E403.3.1 Installation.** Perforated pipe pressure distribution manifolds shall be installed only after the installation of all other utilities has been completed and immediately prior to the soil gas-retarder membrane. Pipes shall be installed with a row of perforations located at the bottom of the pipe in order to allow condensate to drain from the system. Pipes shall be arranged in a pattern that provides at least two possible flow paths from any point in the system to a radon vent pipe. Separate sections of pipe shall be solvent welded or mechanically fastened together.

**E403.3.2 Radon vent connection.** The radon vent pipe shall join to the perforated pipe with a fitting that allows for the fill air-flow capacity of the vent pipe. The soil gas-retarder membrane shall be fully sealed to the radon vents in accordance with the provisions of Section E302.

**E403.4 Continuous gravel layer systems.** Gravel used as the pressure distribution medium shall be installed only after the installation of all other utilities has been completed, and immediately prior to the soil gas-retarder membrane. Where regions of gravel are isolated from one another by interior foundation elements, separate suction points shall be provided in each region, or regions shall be interconnected with pipes run horizontally through the obstruction. The size and number of such pipes shall be sufficient to provide at least two-times the anticipated air-flow. In no case shall fewer than two pipes be used to interconnect one gravel area with another. These pipes shall be separated by a horizontal distance not less than one-half the length of the boundary between the connecting gravel areas.

**E403.4.1 Radon vent connection.** The radon vent pipe shall join to the gravel layer with a “T” fitting that allows for the full airflow capacity of the vent pipe from either side of the “T.” The fitting shall be installed with two arms in the gravel and a single arm connected to the radon vent pipe. The soil-gas-retarder membrane shall be fully scaled to the radon vents in accordance with the provisions of Section 302.

**E403.5 Radon vent pipe installation.** Radon vent pipes shall be solvent welded or otherwise joined to create a gas-tight connection from the soil-suction point to the vent termination point. They shall be sloped a minimum of 1/8 inch (3 mm) per foot in a manner that will drain all rain and condensate back to the soil, and shall be supported in compliance with regulations for plumbing vents.

**E403.5.1 Labeling.** All portions of the radon vent pipe not permanently encased in a wall or chase shall be labeled to prevent accidental misuse. Labels shall consist of a pressure sensitive 2 inch (51 mm) yellow band with the words “RADON REDUCTION SYSTEM” printed in black letters at least 1 inch (25 mm) in height. These labels shall be placed on every visible portion of the vent pipe at a spacing of not more than 3 feet (914 mm). The labels shall be placed so as to be visible from any direction.

The size of vent pipes shall be determined by application of appropriate engineering principles, based on air-flow rates predicted with the large-building active soil-depressurization model. For systems that comply with the alternate compliance method, Section E403.2.2, and are installed in buildings with straight runs of vent pipes no more than 50 feet (15 240 mm) in height, the required number and size of vent pipes may be determined as follows:

1. For up to 100 linear feet (30 480 mm) of ventilation mat use one 2-inch (51 mm) diameter pipe.

2. For up to 200 linear feet (60 960 mm) of ventilation mat use one 3-inch (76 mm) diameter pipe, or two 2-inch (76 mm) diameter pipes.

3. For up to 400 linear feet (121 920 mm) of ventilation mat use one 4-inch (102 mm) diameter pipe, or two 3-inch (76 mm) diameter pipes, or four 2-inch (30 480 mm) diameter pipes.

**E403.5.2 Terminals**. Radon vent pipes shall terminate with a rain cap, installed above the roof of the structure, and shall be located in accordance with existing codes for toxic or noxious exhausts. If not specifically addressed or applicable, vent pipes shall be terminated in locations that minimize human exposure to their exhaust air, such that the location is:

1. At least 12 inches (305 mm) above the surface of the roof;

2. At least 10 feet (3048 mm) from any window, door, or other opening (e.g., operable skylight or air intake) to conditioned spaces of the structure; and

3. Ten feet (3048 mm) from any opening into an adjacent building.

The total required distance [10 feet (3048 mm)] shall be measured either directly between the two points or be the sum of measurements made around the intervening obstacles. If the discharge point is within two feet of elevation of the opening into conditioned space, the distance [10 feet (3048 mm)] shall be the horizontal distance between the points.

**E403.6 Suction fans.** Soil-depressurization system fans shall be designed to maintain the following minimum air-pressure differences at the lower opening of the radon vent pipe as compared to the air pressure of the conditioned space above:

1. For systems using ventilation mats, 0.5 inch (0.52 kPa) water column.

2. For systems using perforated pipe, 0.5 inch (0.52 kPa)water column.

3. For systems using continuous gravel layers, 1.0 inch (0.2488 kPa) water column.

**E403.6.1 Fan sizing.** Soil-depressurization systems that comply with the alternative compliance method, Section E403.2.2, and sizing, Section E403.5.2, may comply by sizing the fan as follows:

1. For up to 100 lineal feet (30 480 mm) of ventilation mat the fan shall be rated for 50 cfm (24 L/s) at 1-inch (30 480 mm) water column.

2. For 100 to 200 lineal feet (30 480 mm to 60 960 mm) of ventilation mat, the fan shall be rated for at least 100 cfm (30 480 mm) at 1-inch (30 480 mm) water column.

3. For 200 to 400 lineal feet (60 960 mm to 121 920 mm) of ventilation mat, the fan shall be rated for at least 175 cfm (83 L/S) at 1-inch (0.2488 kPa) water column.