Analysis of Changes to the Florida Building Code 7th Edition: An Advanced Course

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2 PDH / 2 CE Hours

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Introduction

Welcome! This 2-hour advanced course on the 7th Edition of the Florida Building Code, *Building* provides an analysis of a selection of important changes made to the Florida Building Code during the transition from the 6th Edition to the 7th Edition. The changes featured in this course have been designated by the Florida Building Commission as some of the most significant and impactful changes to the Code. While completing this course, it is especially important to note that the Florida Building Code 6th Edition was based off the 2015 International Building Code while the Florida Building Code 7th Edition is based off the 2018 International Building Code. The Florida Building Code 7th Edition replaced the Florida Building Code 6th Edition on 12/31/2020.

This course, *Analysis of Changes to the Florida Building Code 7th Edition: An Advanced Course*, is provided in accordance with the requirements of the Florida Department of Business and Professional Regulation (DBPR) for the required Advanced Florida Building Code Module.

Please bear in mind that while this course is designed to cover some of the most significant changes from the 6th Edition to the 7th Edition of the Code, it does not cover every change between the Codes. Building professionals will have their own areas of expertise making it essential that every architect, engineer, and contractor carefully study the code sections that most affect and pertain to their professional practice.

Disclaimer*: This course is intended to give the reader information current at the time of publication. This course is not a substitute for professional advice and should not be used for guidance or decisions related to a specific design or construction project. This course is not intended to reflect the opinion of any of the entities, agencies, or organizations identified in the materials.*

Chapter 1 Scope and Administration

Section 110 Inspections

Section 110.3 Required Inspections

In Chapter 1 *Scope and Administration*, an important change to Section 110.3 *Required Inspections* was proposed by a member of the public and approved by the Florida Building Commission. This change incorporates new language that specifically requires in-progress inspections of exterior wall coverings and soffits.

The purpose of the code change is to improve the high wind performance of exterior wall cladding and soffits by requiring inspections to verify compliant installation.

As part of the response to Hurricane Irma in Florida, the Federal Insurance and Mitigation Administration (FIMA) deployed a Mitigation Assessment Team (MAT) composed of national and regional building science experts to assess the damage in Florida. The primary purpose of a MAT is to improve the natural hazard resistance of buildings by evaluating the key causes of building damage, failure, and success. The team then develops strategic recommendations for improving short-term recovery and long-term disaster resilience to future natural hazard events. The following MAT-related information was included in the *FEMA MAT Report: Hurricane Irma in Florida* which was published in December 2018. This information was used to support the change to Section 110.3 *Required Inspections*.

During their assessment, the MAT observed building envelope damage on both older and newer residential construction. Exterior wall coverings and soffits, particularly vinyl products, were among the most frequently observed damaged components. While there were observations indicating the use of products with inadequate wind load design pressure ratings, the MAT frequently observed instances of installation issues that likely contributed to vinyl siding damage.

Additionally, the MAT observed many post-FBC buildings with vinyl and metal soffit damage in the Florida Keys and Collier County. Based on estimated wind speeds at the sites visited, failure occurred to siding and soffit components at wind speeds well below the design wind speeds for these areas. These observations along with other examples detailed in the MAT Report, led to the following conclusions and recommendations:

*Conclusion***:** The MAT observed evidence of inadequate resistance to wind pressures for certain wall coverings of residential buildings. Failure of vinyl siding on post-FBC residential structures was widespread. Instances of improper installation and concerns about appropriate design pressure ratings were probable factors in the damage observed.

Furthermore, the MAT observed evidence of inadequate resistance to wind pressures and improper installation of soffits on residential buildings. Widespread loss of soffits was observed in residential construction, and wind-driven rain infiltrated some areas where soffits were displaced or lost.

*Recommendation***:** The FBC should require wall cladding inspections. Most MAT-observed wall cladding failures demonstrated one or more examples of non-compliant installation, which can be mitigated through field inspections. Common examples of wall cladding failures for vinyl siding include missing utility trim and starter strips.

In addition**,** the FBC should require soffit inspections. Soffit inspections will help to ensure compliant products are used and the soffit is securely attached.

In summary, the failure of soffits and siding on buildings can result in significant water damage to the interior of the building. Specifically requiring inspections of exterior wall and soffit coverings will help ensure compliant products are used and properly installed, which would significantly improve their performance in high wind events.

The final changes to Section 110.3 *Required Inspections* have been provided below. You can read the full text and take note of the changes which have been <u>underlined</u>:

Section 110 Inspections

[A]110.3 Required inspections.

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, fire-blocking 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. Exterior wall coverings. Shall at a minimum include the following building components in progress inspections:

- Exterior wall coverings and veneers
- Soffit coverings

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

- Dry-in
- Insulation
- Roof coverings
- Flashing

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

> 6.1. 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.

7. 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 454.2.17 of this code.

8. 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.

9. 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 453.27.20 of this code).

10. 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.

Section 110 Inspections

Section 110.3.6 Weather-exposed balcony and walking surface waterproofing.

New to the Code in 2020, section 110.3.6 *Weather-exposed balcony and walking surface waterproofing* was also proposed by a member of the public and approved by the Florida Building Commission. This brand-new section requires that all elements of the impervious moisture barrier system must be inspected and approved before being concealed where the following is true:

- balconies or other elevated walking surfaces are exposed to water from direct or blowing rain, snow, or irrigation; and
- the structural framing is protected by an impervious moisture barrier.

This provision was approved by the ICC membership, and it appears in the 2018 edition of the International Building Code. The reason for this change being that detailed inspections are needed to ensure the proper performance of impervious moisture barriers used with exposed balconies and walking surfaces.

There is a history of failures for balconies due to water infiltration, and a specific requirement for the inspection of critical moisture barrier systems is warranted for balconies and elevated walking surfaces that are protected by them.

You can read the full addition to the code below. All changes have been <u>underlined</u>:

<u>110.3.6 Weather-exposed balcony and walking surface waterproofing.</u>

<u>Where balcony or other elevated walking surfaces are exposed to water from direct or blowing rain, snow or irrigation, and the structural framing is protected by an impervious moisture barrier, all elements of the impervious-moisture-barrier system shall not be concealed until inspected and *approved*.</u>

Review Question

1. The inspection of exterior wall coverings shall include which of the following building components in progress inspections?

(a) Soffit coverings

(b) Roof coverings

(c) Exterior wall coverings and veneers

(d) Both (a) and (c) are correct

Chapter 2 Definitions

With the release of each new edition of the Florida Building Code comes the release of new and revised Definitions. The changes in definitions often coincide with changes made to other sections of the Code for the sake of consistency and uniformity.

The following definitions have been selected for review as they directly relate to other code changes featured in this course.

Definitions: Gas Detection System

In the 7th Edition of the Florida Building Code*,* a new, more generic definition of Gas Detection System replaces the former definition for Continuous Gas Detection System. Although no longer a unique definition, continuous gas sampling is still addressed in Section 916.7.

The reason for this change stems from the problem that gas detection systems are required for many different applications in the code. There is great inconsistency in how these systems are treated, and some requirements cannot be enforced because the required listed gas detectors, controls and systems are not commercially available.

A working group of the Fire Code Action Committee developed this proposed code change to helps to address these concerns.

You can read the new definition below. The changes have been <u>underlined</u>:

GAS DETECTION SYSTEM. <u>A system or portion of a combination system that utilizes one or more stationary sensors to detect the presence of a specified gas at a specified concentration and initiate one or more responses required by this code, such as notifying a responsible *person*, activating an alarm signal, or activating or deactivating equipment. A self-contained gas detection and alarm device is not classified as a gas detection system.</u>

Definitions: Wind-borne Debris Region

Another definition that was updated during the code change is that for Wind-borne Debris Region. This definition was revised to correlate with ASCE 7-16 by including a reference to the new Risk Category IV wind speed map.

During Phase I of the 2020 update of the Florida Building Code, the Commission voted to update ASCE 7 from the 2010 edition to the 2016 edition (ASCE 7-16). ASCE 7-16 provides separate wind speed maps for Risk Category III and Risk Category IV buildings and other structures, recognizing the higher reliabilities required for essential facilities and facilities whose failure could pose a substantial hazard to the community. This code change simply makes the necessary updates to the body of the code for correlation with ASCE 7-16.

You can read the revised definition below. The changes have been <u>underlined</u>:

WIND-BORNE DEBRIS REGION. Areas within hurricane-prone regions located:

1. Within 1 mile (1.61 km) of the coastal mean high-water line where the ultimate design wind speed, V_{ult}, is 130 mph (58 m/s) or greater; or

2. In areas where the ultimate design wind speed, V_{ult}, is 140 mph (63.6 m/s) or greater.

For *Risk Category* II buildings and other structures and *Risk Category* III buildings and other structures, except health care facilities, the wind-borne debris region shall be based on Figure 1609.3(1). For *Risk Category* III health care facilities, the wind-borne debris region shall be based on Figure 1609.3(2). For Risk Category IV buildings and other structures, the wind-borne debris region shall be based on Figure 1609.3(3).

Review Question

2. Which of the following would be considered a Wind-borne Debris Region?

(a) An area within 0.5 miles of the coastal mean high-water line where the ultimate design speed is 130 mph or greater

(b) An area within 0.5 miles of the coastal mean high-water line where the ultimate design speed is 100 mph or greater

(c) An area within 1.5 miles of the coastal mean high-water line where the ultimate design speed is 130 mph or greater

(d) None of the above

Chapter 7 Fire and Smoke Protection Features

Section 705 Exterior Walls

Section 705.2 Projections

In Chapter 7 *Fire and Smoke Protection Features,* an important change to Table 705.2 *Minimum Distance of Projection* was proposed by a member of the public and approved by the Florida Building Commission. The purpose of this change is to restore the language from previous versions of the building code. This change also eliminates an anomaly that was found in earlier editions of the code.

In the 2015 edition of the International Building Code (IBC), changes made to Table 705.2 *Minimum Distance of Projection* created more restrictive requirements for projections than those that had been required previously. However, the intent of the change in 2015 had only been to correct the anomaly, and there was no technical justification for the more restrictive requirements.

In codes prior to the 2015 edition, 40 inches was the maximum fire separation distance that would be required for a projection. But according to the 2015 edition, a building that had a fire separation distance of 30 feet would be required to hold the projection back from the lot line by a minimum of 20 feet. This requirement was over-restrictive, and the purpose of the change in the 7th Edition of the Florida Building Code is to reverse it.

In the 7th Edition of the FL Building Code, the fire separation distance (FSD) is described much more clearly. The following changes have been made:

- The minimum distance from the FSD line for projections has been revised for FSD's of 5 feet and greater.
- The 20-foot minimum separation for an FSD of 30 feet and greater has been deleted.
- Where the FSD is 5 feet or greater, the minimum distance of the projection from the property line (or other line used to determine the FSD) is now 40 inches.

You can read the full modifications to the code below. All changes have been <u>underlined</u>:

Section 705 Exterior Walls

705.2 Projections.

Cornices, eave overhangs, exterior balconies and similar projections extending beyond the exterior wall shall conform to the requirements of this section and Section 1406. Exterior egress balconies and exterior exit stairways and ramps shall comply with Sections 1021 and 1027, respectively. Projections shall not extend any closer to the line used to determine the fire separation distance than shown in Table 705.2.

Exception: Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with this section for projections between the buildings.

TABLE 705.2 MINIMUM DISTANCE OF PROJECTION

FIRE SEPARATION DISTANCE (FSD) (feet)	MINIMUM DISTANCE FROM LINE USED TO DETERMINE FSD
0 to less than 2	Projections not permitted
2 to less than 3	24 inches
3 to less than 5	24 inches plus 8 inches for every foot of FSD beyond 3 feet or fraction thereof
5 or greater	40 inches

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

Review Question

3. What is the minimum distance of projection from the property line if the Fire Separation Distance is less than 2 feet?

(a) 24 inches

(b) 36 inches

(c) 40 inches

(d) Projection is not permitted

Chapter 9 Fire Protection Systems

Section 903 Automatic Sprinkler Systems

Section 903.3.1.2.3 Attics

A new section, adopted from the 2018 International Building Code (IBC), has been added to Chapter 9 *Fire Protection Systems.* This new section is specific to the protection of attics. Section 903.3.1.2.3 *Attics* describes new requirements when using an NFPA *13R automatic sprinkler system*. In previous versions of the code there had been a handful of requirements that were only in place for Group R4 Condition 2; those requirements now apply to all attics that meet the following requirements:

1. Attics used or intended for living purposes or storage;
2. Where fuel-fired equipment is installed in an un-sprinklered attic, at least one quick-response sprinkler is required to be installed above the equipment.

Additionally, attic protection is now required for Types III, IV, and V construction where the roof assembly is located more than 55 feet above the lowest level of required fire department vehicle access.

Alternatives to sprinkler protection include:

- Constructing the attic of noncombustible materials;
- Constructing the attic of fire-retardant-treated wood; or
- Filling the attic with noncombustible insulation.

It is also important to note that the existing requirements in Section 903.2.8.3 for Group R-4, Condition 2 have been relocated to this new section as they are applicable to attic protection.

You can read the addition to the code below. All changes have been <u>underlined</u>:

Section 903 Automatic Sprinkler Systems

[F] 903.3 Installation Requirements

Automatic sprinkler systems shall be designed and installed in accordance with Sections 903.3.1 through 903.3.8.

[F] 903.3.1.2 NFPA 13R sprinkler systems.

Automatic sprinkler systems in Group R occupancies up to and including four stories in height in buildings not exceeding 60 feet (18 288 mm) in height above grade plane shall be permitted to be installed throughout in accordance with NFPA 13R.

The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 shall be measured from the horizontal assembly creating separate buildings.

903.3.1.2.3 Attics.

Attic protection shall be provided as follows:

1. Attics that are used or intended for living purposes or storage shall be protected by an *automatic sprinkler system*.

2. Where fuel-fired equipment is installed in an un-sprinklered attic, at least one quick-response intermediate temperature sprinkler shall be installed above the equipment.

3. Where located in a building of Type III, Type IV or Type V construction designed in accordance with Section 510.2 or Section 510.4, attics not required by Item 1 to have sprinkler protection shall comply with one of the following if the roof assembly is located more than 55 feet (16 764 mm) above the lowest level of required fire department vehicle access:

   a. Provide *automatic sprinkler system* protection.

   b. Construct the attic using noncombustible materials.

   c. Construct the attic using fire-retardant-treated wood complying with Section 2303.2.

   d. Fill the attic with noncombustible insulation.

The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance. For the purpose of this measurement, required fire vehicle access roads shall include only those roads that are necessary for compliance with the *Florida Fire Prevention Code*.

4. Group R-4 Condition 2 occupancy attics not required by Item 1 to have sprinklers shall comply with one of the following:

   a. Provide *automatic sprinkler system* protection.

   b. Provide a heat detector system throughout the attic that is arranged to activate the building fire alarm system in accordance with Section 907.2.10.

   c. Construct the attic using noncombustible materials.

   d. Construct the attic using fire-retardant-treated wood complying with Section 2303.2.

   e. Fill the attic with noncombustible insulation.

Review Question

4. Alternatives to sprinkler protection do NOT include:

(a) Constructing the attic of fire-retardant-treated wood

(b) Filling the attic with noncombustible insulation

(c) Construction a fire-separation wall at least 10 inches thick between the attic and the rest of the building

(d) Constructing the attic of noncombustible materials

Section 916 Gas Detection Systems

Another substantial change to the Florida Building Code is found in the newly created Section 916 Gas Detection Systems. The provisions for gas detection systems in previous of the Code have been consolidated into this new section. Additionally, former sections 908.3 through 908.7 have been deleted, and their specific requirements have been relocated to Section 916. It is important to note that these revisions remove previous inconsistencies with how gas detection systems are treated in the code and improve enforceability.

Gas detection systems are required for many different applications in the code. Historically there has been great inconsistency in how gas detection systems were treated, and some requirements were unable to be enforced because the required listed gas detectors, controls and systems have not been commercially available. A working group of the Fire Code Action Committee that included industry and code officials worked on developing this code change that addresses these concerns. The significant changes accomplished with their proposal are as follows:

The new Section 916 includes basic requirements for all gas detection systems and covers:

- construction documents,
- equipment,
- power connections,
- emergency and standby power,
- sensor locations,
- gas sampling,
- system activation,
- signage,
- fire alarm system connections,
- maintenance,
- testing, and
- sensor calibration.

These are important safety requirements that are applicable to all gas detection systems. This includes gas detection systems installed anywhere from small mom-and pop-operations to large industrial facilities. Please be advised that gas detection system equipment is commercially available that can comply with all requirements.

You can read the new additions to the code below. All changes have been underlined:

Section 916 Gas Detection Systems

[F]916.1 Gas detection systems.

Gas detection systems required by this code shall comply with Sections 916.2 through 916.11.

[F]916.2 Permits.

Permits shall be required as set forth in the *Florida Fire Prevention Code*.

[F]916.2.1 Construction documents.

Documentation of the gas detection system design and equipment to be used that demonstrates compliance with the requirements of this code shall be provided with the application for permit.

[F]916.3 Equipment.

Gas detection system equipment shall be designed for use with the gases being detected and shall be installed in accordance with manufacturer's instructions.

[F]916.4 Power connections.

Gas detection systems shall be permanently connected to the building electrical power supply or shall be permitted to be cord connected to an unswitched receptacle using an approved restraining means that secures the plug to the receptacle.

[F]916.5 Emergency and standby power.

Standby or emergency power shall be provided or the gas detection system shall initiate a trouble signal at an approved location if the power supply is interrupted.

[F]916.6 Sensor locations.

Sensors shall be installed in approved locations where leaking gases are expected to accumulate.

[F]916.7 Gas sampling.

Gas sampling shall be performed continuously. Sample analysis shall be processed immediately after sampling, except as follows:

1.For HPM gases, sample analysis shall be performed at intervals not exceeding 30 minutes.

2.For toxic gases, sample analysis shall be performed at intervals not exceeding 5 minutes in accordance with the *Florida Fire Prevention Code*.

3.Where a less frequent or delayed sampling interval is approved.

[G]916.8 System activation.

A gas detection alarm shall be initiated where any sensor detects a concentration of gas exceeding the following thresholds:

1.For flammable gases, a gas concentration exceeding 25 percent of the lower flammability limit (LFL).

2.For nonflammable gases, a gas concentration exceeding one-half of the IDLH, unless a different threshold is specified by the section of this code requiring a gas detection system.

Upon activation of a gas detection alarm, alarm signals or other required responses shall be as specified by the section of this code requiring a gas detection system. Audible and visible alarm signals associated with a gas detection alarm shall be distinct from fire alarm and carbon monoxide alarm signals.

[F]916.9 Signage.

Signs shall be provided adjacent to gas detection system alarm signaling devices that advise occupants of the nature of the signals and actions to take in response to the signal.

[F]916.10 Fire alarm system connections.

Gas sensors and gas detection systems shall not be connected to fire alarm systems unless approved and connected in accordance with the fire alarm equipment manufacturer's instructions.

[F]916.11 Inspection, testing and sensor calibration.

Gas detection systems and sensors shall be inspected, tested and calibrated in accordance with the *Florida Fire Prevention Code*.

Review Question

5. According to [F]916.7 Gas sampling, the sample analysis for HPM gases shall be performed at intervals not exceeding ________ minutes.

(a) 30

(b) 40

(c) 60

(d) 10

Chapter 14 Exterior Walls

Section 1407 Metal Composite Materials (MCM)

Section 1407.11 Alternate conditions (MCMs and MCM systems)

In the 7th Edition of the Florida Building Code, former Sections 1407.11 through 1407.11.4.4 have been deleted in their entirety. The purpose of this change is to eliminate alternate conditions allowable for Metal Composite Materials (MCM)

Fire events around the world have made everyone rethink how MCM panels fit within the construction landscape. Although many of the fires involved products and/or wall assemblies that would not have been allowed to be constructed under the Code if it had been in place at the time of construction, there are still questions regarding the allowable use of standard core and fire resistive MCM panels.

In order to address these questions, the MCM Manufacturers that are members of the Metal Construction Association agreed that to simplify the application of MCM, Section 1407.11 *Alternate condition*s, which is based on the allowable use of other combustible exterior envelope materials within the code, should be removed. Removing Section 1407.11 *Alternate conditions* will eliminate questions from both designers and code compliance officials on the appropriate product to use.

Additionally, changes were also made to Section 1407.10 *Type I, II, III, and IV construction.* These changes provide clarification of MCM and MCM systems because Section 1407.10.1 specifically applies to the MCM "panel" (referred to as MCM in the code) while Sections 1407.10.2 through 1407.10.4 reference both MCM and MCM systems. Furthermore, by using the "40 feet above grade plane" limit as a trigger for MCM system compliance with NFPA 285, the product decision is simplified, and the code is made much clearer.

You can read the changes to the code below. All changes have been underlined:

Section 1407 Metal Composite Materials (MCM)

Section 1407.10 Type I, II, III and IV construction.

Where installed on buildings of Type I, II, III and IV construction, MCMs and MCM systems shall comply with Sections 1407.10.1 through 1407.10.3 for installations up to 40 feet (12 192 mm) above grade plane. Where installed on buildings of Type I, II, III and IV construction, MCMs and MCM systems shall comply with Sections 1407.10.1 through 1407.10.4 for installations greater than 40 feet (12 192 mm) above grade plane.

1407.10.1 Surface-burning characteristics.

MCM shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested as an assembly in the maximum thickness intended for use in accordance with ASTM E84 or UL 723.

1407.10.2 Thermal barriers.

MCM shall be separated from the interior of a building by an approved thermal barrier consisting of 1/2-inch (12.7 mm) gypsum wallboard or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.

1407.10.3 Thermal barrier not required.

The thermal barrier specified for MCM in Section 1407.10.2 is not required where:

1. The MCM system is specifically approved based on tests conducted in accordance with NFPA 286 and with the acceptance criteria of Section 803.1.2.1, UL 1040 or UL 1715. Such testing shall be performed with the MCM in the maximum thickness intended for use. The MCM system shall include seams, joints and other typical details used in the installation and shall be tested in the manner intended for use.

2. The MCM is used as elements of balconies and similar projections, architectural trim or embellishments.

1407.10.4 Full-scale tests.

The MCM system shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285. Such testing shall be performed on the MCM system with the MCM in the maximum thickness intended for use.

<u>1407.11</u>

<u>Reserved</u>.

Review Question

6. In the 7th Edition of the Florida Building Code, former Section _______ has been deleted in its entirety.

(a) 1704.11

(b) 1407.11

(c) 1407.44

(d) None of the above

Chapter 15 Roof Assemblies and Rooftop Structures

Section 1507 Requirements for Roof Coverings

Revisions to the Florida Building Code include significant changes to Section 1507 *Requirements for Roof Coverings*. In this section, underlayment types and installation for all roof coverings have been revised to be consistent with the recommendations from IBHS (Insurance Institute for Business and Home Safety) to create a "sealed roof deck." The key changes are as follows:

- Where felt underlayment is used, it must be 30# or equivalent (ASTM D 226 Type II, ASTM D4869 Types III or IV).
- Installation techniques such as number of plies, lapping, and fastener spacing has been strengthened.
- Where self-adhering strips/tapes are applied over roof deck joints, a 30# equivalent underlayment with enhanced fastening is required over the strips/tapes.

Additionally, underlayment for concrete and clay tile roofs is required to be in accordance with the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual.

The changes to Section 1507 also include a new exception that permits an existing self-adhered membrane to remain on the roof provided that, if required, re-nailing of the roof deck in accordance with Section 706.7.1 of the FBCEB can be confirmed or verified. An approved underlayment for the applicable roof coverings is required to be applied over the existing self-adhered membrane.

Furthermore, Table 1507.1.1 *Underlayment Table* has been deleted and replaced by Table 1507.1.1.1 *Underlayment with Self-Adhering Strips Over Roof Deck Joints.* This new table specifies the required underlayment types, lapping, and fasteners where self-adhering strips/tapes are applied to the roof deck joints.

The reasoning behind these changes is to significantly reduce the amount of water infiltration through the roof deck when roof coverings are lost. When the primary roof covering is lost due to a wind event, water infiltration can cause extensive damage to interior finishes, furnishings, and other contents, and can lead to ceiling collapse when the insulation is saturated. Also, where power is lost and/or a building cannot otherwise be quickly dried out, mold growth is common.

While observations from recent hurricanes indicate buildings built according to the Florida Building Code are performing better than older buildings, significant roof covering loss is still occurring. Many of these buildings, while relatively undamaged structurally, experienced significant and costly damage to interior components due the loss of the primary roof covering. A sealed roof deck can significantly reduce the amount of water infiltration when the primary roof covering is lost. A demonstration test by IBHS on building with portion of the roof sealed and another portion unsealed showed significant reductions in water infiltration in the areas where the roof deck was sealed.

Underlayment requirements in the FBC have been strengthened recently, but these changes will take them one step further to comply with the IBHS Fortified Home Bronze designation. The changes in requirements from the 6th Edition (2017) FBC to the 7th Edition are outlined below:

- Where felt underlayments are used without membrane/flashing strips applied over the joints in the roof deck, two layers are now required.
- The lap requirements currently required for low slope roofs would be required for all slopes.
- Fasteners for felt underlayment are required to be annular ring or deformed shank fasteners.
- The number of fasteners and spacing of fasteners is consistent with current requirements.
- The options for using adhered underlayments are unchanged from the 6th Edition (2017) FBC.

You can read the additions and modifications to the code below. All changes have been underlined:

Section 1507 Requirements for Roof Coverings

1507.1 Scope.

Roof coverings shall be applied in accordance with the applicable provisions of this section and the manufacturer's installation instructions.

1507.1.1 Underlayment

Underlayment for roof slopes 2:12 and greater shall conform to the applicable standards listed in this chapter. Underlayment materials required to comply with ASTM D226, D1970, D4869 and D6757 shall bear a label indicating compliance to the standard designation and, if applicable, type classification indicated. Underlayment for roof slopes 2:12 and greater shall be applied and attached in accordance with Section 1507.1.1.1, 1507.1.1.2 or 1507.1.1.3 as applicable.

Exceptions:

1. For areas of a roof that cover exterior walkways and roofs of agricultural buildings, underlayment shall comply with the manufacturer's installation instructions.

2. Compliance with Section 1507.1.1.1 is not required for structural metal panels that do not require a substrate or underlayment.

1507.1.1.1 Underlayment for asphalt, metal, mineral surfaced, slate and slate-type roof coverings.

Underlayment for asphalt shingles, metal roof shingles, mineral surfaced roll roofing, slate and slate-type shingles, and metal roof panels shall comply with one of the following methods:

1. The entire roof deck shall be covered with an approved self-adhering polymer modified bitumen underlayment complying with ASTM D1970 installed in accordance with both the underlayment manufacturer's and roof covering manufacturer's installation instructions for the deck material, roof ventilation configuration and climate exposure for the roof covering to be installed.

Exception: An existing self-adhering modified bitumen underlayment that has been previously installed over the roof decking and, where it is required, renailing off the roof sheathing in accordance with Section 706.7.1 of the *Florida Building Code, Existing Building* can be confirmed or verified. An approved underlayment in accordance with Table 1507.1.1.1 for the applicable roof covering shall be applied over the entire roof over the existing self-adhered modified bitumen underlayment.

2. A minimum 4-inch-wide (102 mm) strip of selfadhering polymer-modified bitumen membrane complying with ASTM D1970, installed in accordance with the manufacturer's instructions for the deck material, shall be applied over all joints in the roof decking. An approved underlayment in accordance with Table 1507.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 4-inch-wide (102 mm) membrane strips.

Exception: A synthetic underlayment that is approved as an alternative to underlayment complying with ASTM D226 Type II and having a minimum tear strength of 15 lbf in accordance with ASTM D4533 and a minimum tensile strength of 20 lbf/inch in accordance with ASTM D5035 shall be permitted to be applied over the entire roof over the 4-inchwide (102 mm) membrane strips. This underlayment shall be installed and attached in accordance with the underlayment attachment methods of Table 1507.1.1.1 for the applicable roof covering and slope and the underlayment manufacturer's installation instructions.

3. A minimum 3 3/4-inch-wide (96 mm) strip of selfadhering flexible flashing tape complying with AAMA 711, Level 3 [for exposure up to 176°F (80°C)], installed in accordance with the manufacturer's instructions for the deck material, shall be applied over all joints in the roof decking. An approved underlayment in accordance with Table 1507.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 4-inchwide (102 mm) flashing strips.

Exception: A synthetic underlayment that is approved as an alternative to underlayment complying with ASTM D226 Type II and having a minimum tear strength of 15 lbf in accordance with ASTM D4533 and a minimum tensile strength of 20 lbf/inch in accordance with ASTM D5035 shall be permitted to be applied over the entire roof over the 4-inchwide (102 mm) membrane strips. This underlayment shall be installed and attached in accordance with the underlayment attachment methods of Table 1507.1.1.1 for the applicable roof covering and slope and the underlayment manufacturer's installation instructions.

4. Two layers of ASTM D226 Type II or ASTM D4869 Type III or Type IV underlayment shall be installed as follows: 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); end laps shall be 6 inches (152 mm) and shall be offset by 6 feet (1829 mm). The underlayment shall be attached to a nailable deck with corrosion-resistant fasteners with one row centered in the field of the sheet with a maximum fastener spacing of 12 inches (305 mm)

o.c., and one row at the end and side laps fastened 6 inches (152 mm) o.c. Underlayment shall be attached using annular ring or deformed shank nails with metal or plastic caps with a nominal cap diameter of not less than 1 inch (25.4 mm). Metal caps are required where the ultimate design wind speed, V_{ult}, equals or exceeds 170 mph. Metal caps shall have a thickness of not less than 32-gage sheet metal. Powerdriven metal caps shall have a minimum thickness of 0.010 inch (0.254 mm). The minimum thickness of the outside edge of plastic caps shall be 0.035 inch (0.889 mm). The cap nail shank shall be not less than 0.083 inch (2.1082 mm) for ring shank cap nails. The cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch (19.05 mm) into the roof sheathing.

5. Two layers of a synthetic underlayment that has a product approval as an alternative to underlayment complying with ASTM D226 Type II shall be permitted to be used. Synthetic underlayment shall have a minimum tear strength of 15 lbf in accordance with ASTM D4533, shall have a minimum tensile strength of 20 lbf/inch in accordance with ASTM D5035 and shall meet the liquid water transmission test of Section 8.6 of ASTM D4869. Synthetic underlayment shall be installed as follows: Apply a strip of synthetic underlayment that is half the width of a full sheet parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply full sheets of reinforced synthetic underlayment, overlapping successive sheets half the width of a full sheet plus the width of the manufacturer's single-ply overlap. End laps shall be 6 inches (152 mm) and shall be offset by 6 feet (1829 mm). Synthetic underlayment shall be attached to a nailable deck with corrosion-resistant fasteners with a maximum fastener spacing measured horizontally and vertically of 12 inches (305 mm) o.c. between side laps, and one row at the end and side laps fastened 6 inches (152 mm) o.c. Synthetic underlayment shall be attached using annular ring or deformed shank nails with metal or plastic caps with a nominal cap diameter of not less than 1 inch (25.4 mm). Metal caps are required where the ultimate design wind speed, V_{ult}, equals or exceeds 170 mph. Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch (0.254 mm). The minimum thickness of the outside edge of plastic caps shall be 0.035 inch (0.889 mm). The cap nail shank shall be not less than 0.083 inch (2.1082 mm) for ring shank cap nails. The cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch (19.05 mm) into the roof sheathing.

TABLE 1507.1.1.1 UNDERLAYMENT WITH SELF-ADHERING STRIPS OVER ROOF DECKING JOINTS

Roof Covering	**Underlayment Type**	**Underlayment Attachment**	
		2:12 = Roof Slope < 4:12	**Roof Slope > 4:12**
Asphalt Shingles, Metal Roof Panels, Photovoltaic Shingles	ASTM D226 Type II ASTM D4869 Type III or IV ASTM D6757	Apply in accordance with Section 1507.1.1.1, Item 4 or Section 1507.1.1.3, Item 3 as applicable to the type of roof covering.	Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 4 inches; end laps shall be 6 inches and shall be offset by 6 feet. The underlayment shall be attached to a nailable deck with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 inches o.c., and one row at the end and side laps fastened 6 inches o.c. Underlayment shall be attached using annular ring or deformed shank nails with metal or plastic caps with a nominal cap diameter of not less than 1 inch. Metal caps are required where the ultimate design wind speed, V_{ult}, equals or exceeds 170 mph. Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. The minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch for ring shank cap nails and 0.091 inch for smooth shank cap nails. The cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch into the roof sheathing.
Metal Roof Shingles, Mineral-Surface Roll Roofing, Slate and Slate-type Shingles, Wood Shingles, Wood Shakes	ASTM D226 Type II ASTM D4869 Type III or IV		

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

1507.1.1.2 Underlayment for concrete and clay tile.

Underlayment for concrete and clay tile shall comply with Section 1507.3.3.

1507.1.1.3 Underlayment for wood shakes and shingles.

Underlayment for wood shakes and shingles shall comply with one of the following methods:

1. A minimum 4-inch-wide (102 mm) strip of selfadhering polymer-modified bitumen membrane complying with ASTM D1970, installed in accordance with the manufacturer's instructions for the deck material, shall be applied over all joints in the roof decking. An approved underlayment in accordance with Table 1507.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 4-inch-wide (102 mm) membrane strips.

2. A minimum 3 3/4-inch-wide (96 mm) strip of selfadhering flexible flashing tape complying with AAMA 711, Level 3 [for exposure up to 176°F (80°C)], installed in accordance with the manufacturer's instructions for the deck material, shall be applied over all joints in the roof decking. An underlayment complying with Table 1507.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 4-inch-wide (102 mm) flashing strips.

3. Two layers of ASTM D226 Type II or ASTM D4869 Type III or Type IV underlayment shall be installed as follows: 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); end laps shall be 6 inches (152 mm) and shall be offset by 6 feet (1829 mm). The underlayment shall be attached to a nailable deck with corrosion-resistant fasteners with one row centered in the field of the sheet with a maximum fastener spacing of 12 inches (305 mm) o.c., and one row at the end and side laps fastened 6 inches (152 mm) o.c. Underlayment shall be attached using annular ring or deformed shank nails with metal or plastic caps with a nominal cap diameter of not less than 1 inch (25.4 mm). Metal caps are required where the ultimate design wind speed, V_{ult}, equals or exceeds 170 mph. Metal caps shall have a thickness of not less than 32-gage sheet metal. Powerdriven metal caps shall have a minimum thickness of 0.010 inch (0.254 mm). The minimum thickness of the outside edge of plastic caps shall be 0.035 inch (0.889 mm). The cap nail shank shall be not less than 0.083 inch (2.1082 mm) for ring shank cap nails. The cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than 3/4 inch (19.05 mm) into the roof sheathing.

Review Questions

7. Where felt underlayments are used without membrane/flashing strips applied over the joints in the roof deck, how many layer(s) are now required?

(a) one

(b) two

(c) three

(d) four

8. Exceptions to Section 1507.1.1 *Underlayment* includes areas of a roof that cover which of the following?

(a) Exterior walkways

(b) Attached Garages

(c) Agricultural buildings

(d) Both (a) and (c)

Section 1510 Rooftop Structures

Section 1510.7.1 Wind Resistance – Photovoltaic Systems

Another important change made to Chapter 15 of the Florida Building Code can be found in Section 1510 *Rooftop Structures*. Specifically, Section 1510.7.1 *Wind Resistance* for photovoltaic systems. This change correlates the wind loading requirements on roof mounted photovoltaic systems with the newly referenced ASCE 7-16. During Phase I of the 2020 update of the FBC, the Commission voted to update ASCE 7 from the 2010 edition to the 2016 edition (ASCE 7-16). ASCE 7-16 contains two new methods for wind loads on photovoltaic systems. One method is based on the component and cladding loads applicable to the roof. The other method is based on entirely different criteria and research. Therefore, for clarification, this proposal simply references ASCE 7 for wind loads on rooftop photovoltaic systems.

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The previous specifications for wind design criteria for rooftop-mounted photovoltaic systems have been deleted.

You can read the additions and modifications to the code below. All changes have been underlined:

Section 1510 Rooftop Structures

[BG]1510.7 Photovoltaic systems.

Rooftop-mounted photovoltaic systems shall be designed in accordance with this section.

[BG]1510.7.1 Wind resistance.

Rooftop-mounted *photovoltaic* systems shall be designed for wind loads in accordance with ASCE 7.

Chapter 16 Structural Design

Section 1609 Wind Loads

Section 1609.1.1 Determination of Wind Loads

Chapter 16 underwent several changes during the transition to the 7th Edition of the Florida Building Code. In Section 1609.1.1 *Determination of Wind Loads, e*xception 4 has been revised to add the title *Guide Specifications for Design of Metal Flagpoles* to the standard reference NAAMM FP 1001.

The reason for this change is to add the name of the standard. Without the name it is not well known that the standard is for metal flagpoles. This simple clarification allows Florida Building Code users to quickly determine that flagpoles also need to meet design criteria.

You can read the additions and modifications to the code below. All changes have been <u>underlined</u>:

Section 1609 Wind Loads

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 1709.10 of this code.

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. 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 AWC WFCM.

3. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AISI S230.

<u>4. Designs using NAAMM FP 1001, *Guide Specifications for Design of Metal Flagpoles*.</u>

<u>5. Designs using TIA-222 for antenna-supporting structures and antennas. Design using this standard shall be permitted for communication tower and steel antenna support structures.</u>

6. Wind tunnel tests in accordance with ASCE 49 and Sections 31.4 and 31.5 of ASCE 7.

7. Wind loads for screen enclosures shall be determined in accordance with Section 2002.4.

8. Exposed mechanical equipment or appliances fastened to a roof or installed on the ground in compliance with the code using rated stands, platforms, curbs, slabs, walls, or other means are deemed to comply with the wind resistance requirements of the 2007 Florida Building Code, as amended. Further support or enclosure of such mechanical equipment or appliances is not required by a state or local official having authority to enforce the Florida Building Code.

The wind speeds in Figures 1609.3(1), 1609.3(2), 1609.3(3) and 1609.3(4) 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 4 and 5 are used.

Section 1609 Wind Loads

Section 1609.3(3) Ultimate Design Wind Speed, V_{ult}, for Risk Category IV Buildings and Other Structures

Another change made to Chapter 16 involves the addition of a new wind speed map specific to Risk Category IV buildings and structures. Figure 1609.3(2) now only applies to Risk Category III buildings and structures. Figure 1609.3(3) provides the new wind speed map for Risk Category IV buildings and structures is consistent with ASCE 7-16 and is based on a mean recurrence interval of 3000 years. Numerous sections throughout the Code have been modified to incorporate reference to Figure 1609.3(3).

This code change correlates the wind loading criteria in Chapter 16 with the newly referenced ASCE 7-16. ASCE 7-16 provides separate wind speed maps for Risk Category III and Risk Category IV buildings and other structures, recognizing the higher reliabilities required for essential facilities and facilities whose failure could pose a substantial hazard to the community. This code change simply makes the necessary updates to the body of the code for correlation with ASCE 7-16.

You can read the additions and modifications to the code below. All changes have been underlined:

Section 1609 Wind Loads

1609.3 Ultimate design wind speed.

The ultimate design wind speed, V_{ult}, in mph, for the determination of the wind loads shall be determined by Figures 1609.3(1), 1609.3(2), 1609.3(3) and 1609.3(4). The ultimate design wind speed, V_{ult}, for use in the design of Risk Category II buildings and structures shall be obtained from Figure 1609.3(1). The ultimate design wind speed, V_{ult}, for use in the design of Risk Category III buildings and structures shall be obtained from Figure 1609.3(2). The ultimate design wind speed, V_{ult}, for use in the design of Risk Category IV buildings and structures shall be obtained from Figure 1609.3(3). The ultimate design wind speed, V_{ult}, for use in the design of Risk Category I buildings and structures shall be obtained from Figure 1609.3(4). 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 Chapter 26 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.

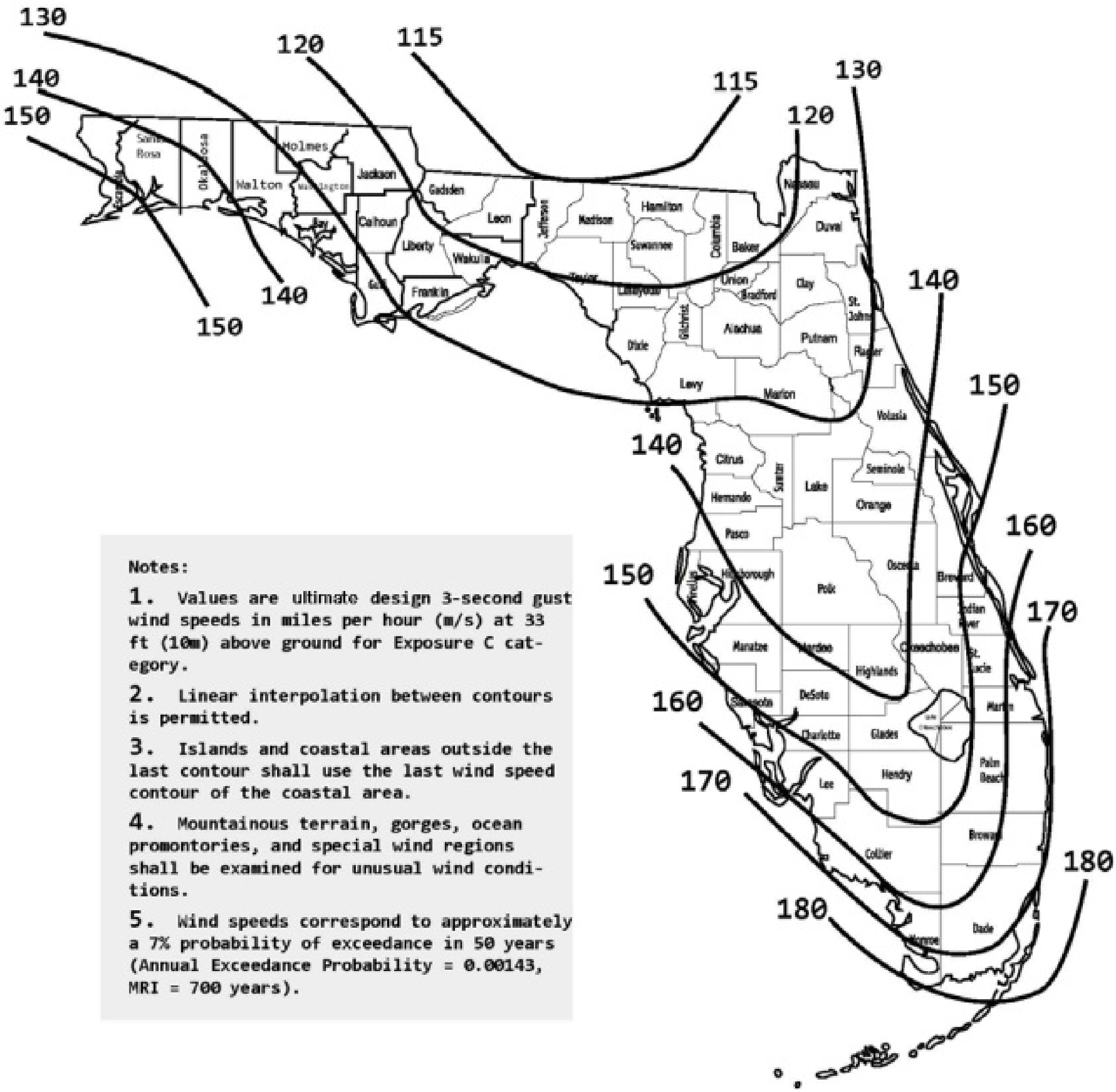

FIGURE 1609.3(1) ULTIMATE DESIGN WIND SPEEDS, V_{ult}, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES

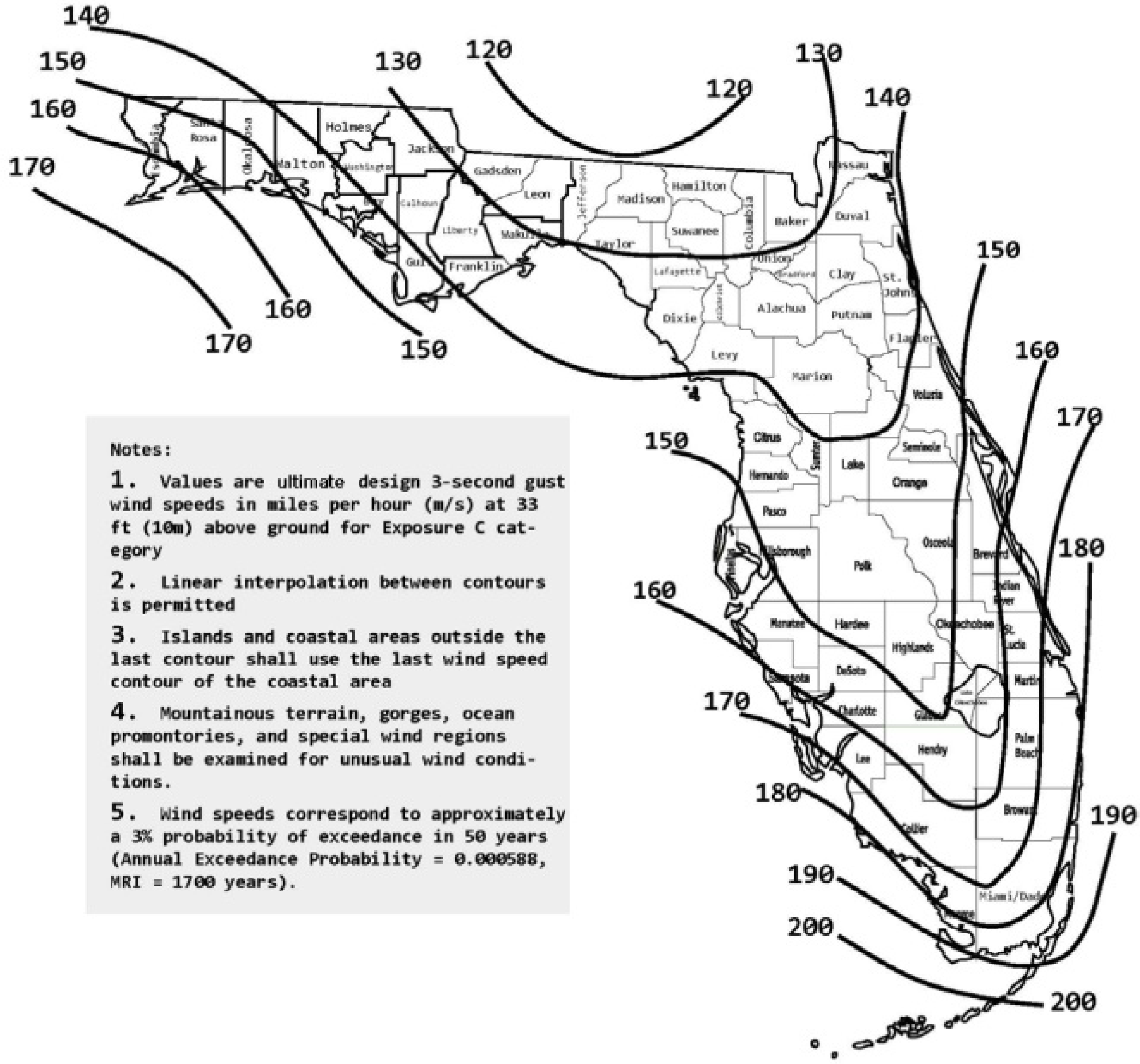

FIGURE 1609.3(2) ULTIMATE DESIGN WIND SPEEDS, V_{ult}, FOR RISK CATEGORY III BUILDINGS AND OTHER STRUCTURES

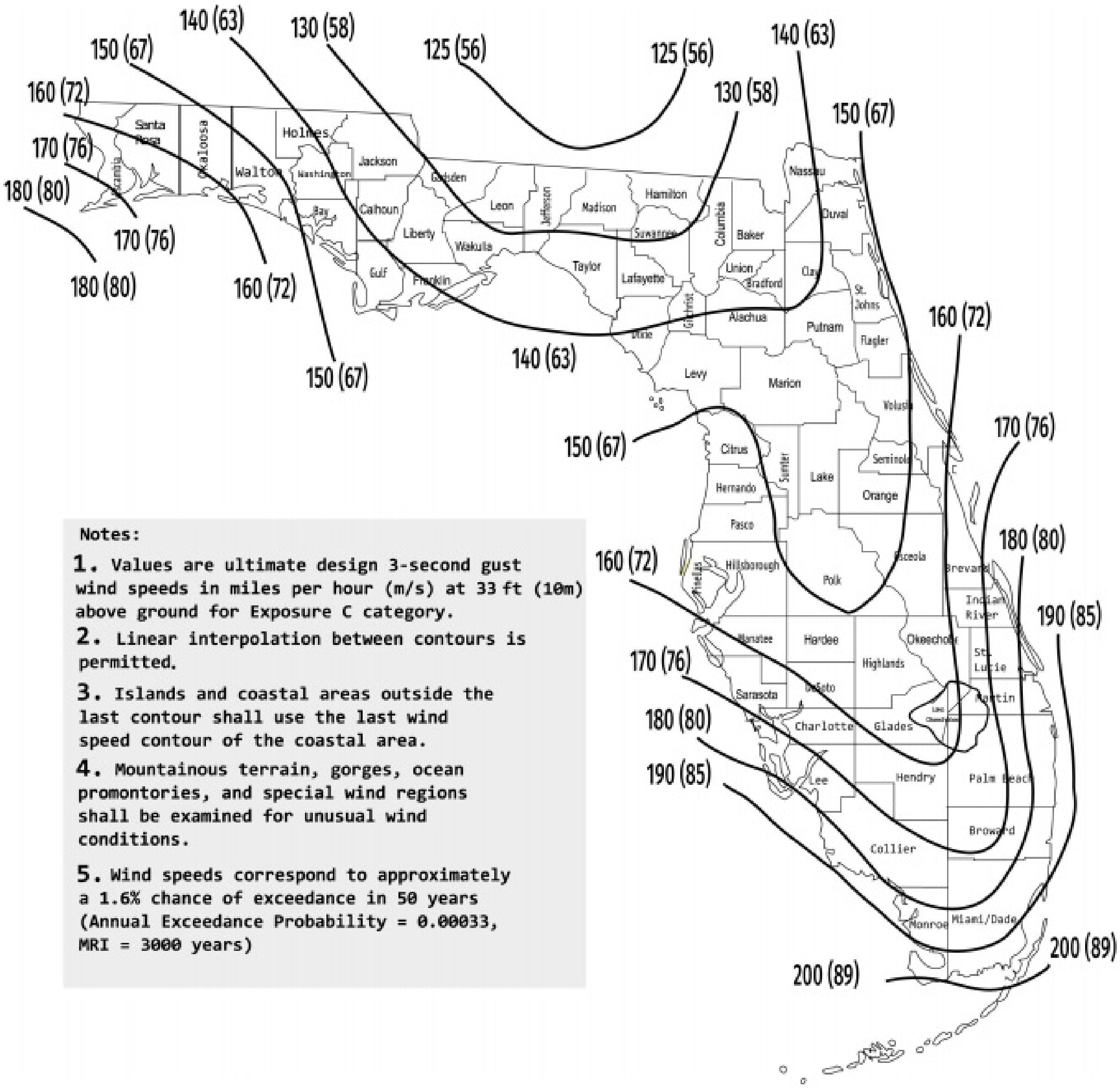

FIGURE 1609.3(3) ULTIMATE DESIGN WIND SPEEDS, V_{ult}, FOR RISK CATEGORY IV BUILDINGS AND OTHER STRUCTURES

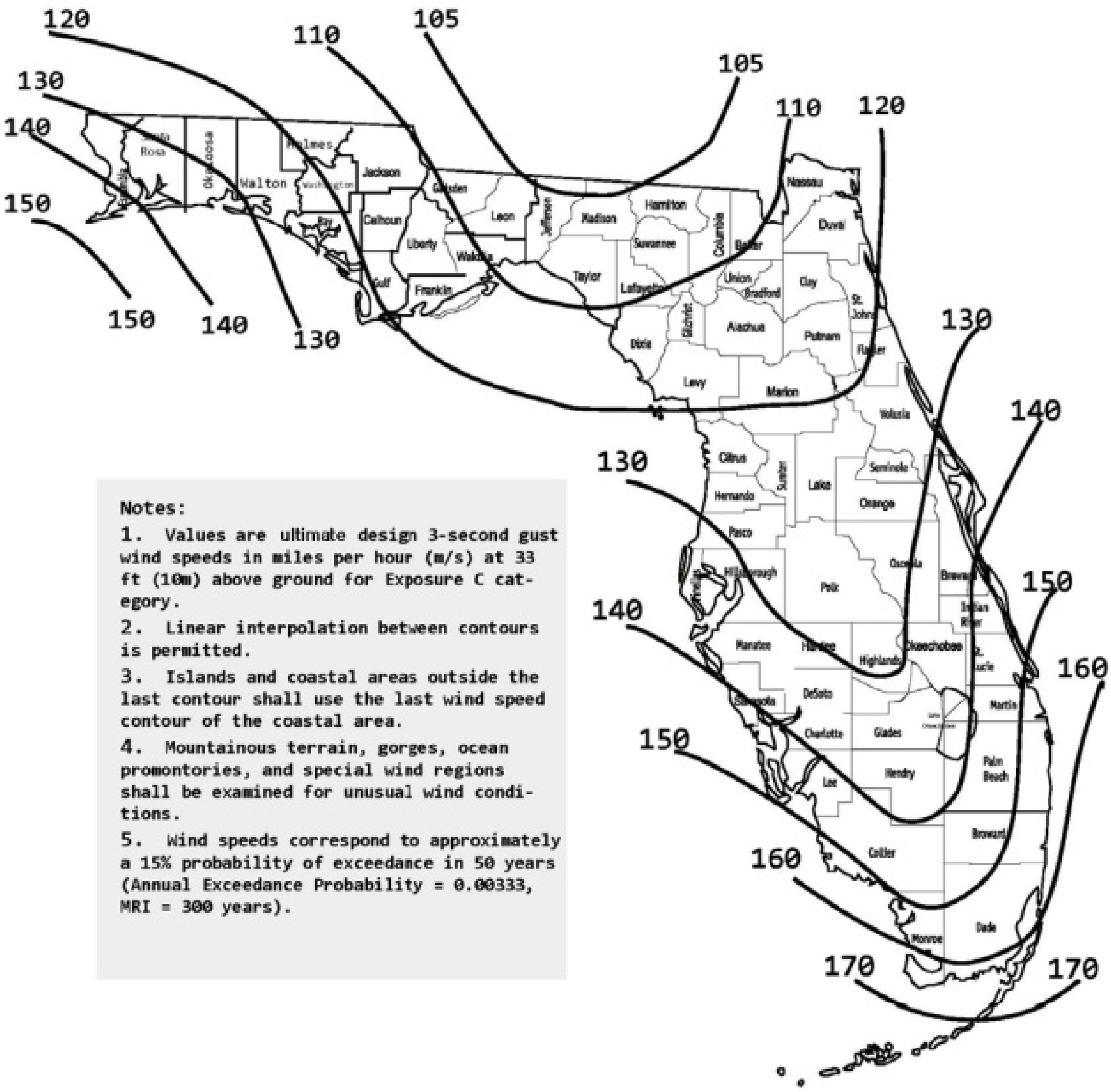

FIGURE 1609.3(4) ULTIMATE DESIGN WIND SPEEDS, V_{ult}, FOR RISK CATEGORY I BUILDINGS AND OTHER STRUCTURES

Review Question

9. ASCE 7-16 provides a separate wind speed map for Risk Category III and Risk Category IV buildings to recognize the higher reliabilities required for which of the following facilities?

(a) Essential facilities

(b) Facilities who failure could pose a substantial hazard to the community

(c) Government facilities

(d) Both (a) and (b)

Section 1612 Flood Loads

Section 1612.4.2 Modification of ASCE Pools

Finally, a new exception has been added to Section 1612.4.2 *Modification of ASCE Pools* that provides for a variance from Section 9.6 of ASCE 24 regarding pools. This new exception permits equipment for pools, spas, and water features to be located below the elevation required in Table 7-1 of ASCE 24 provided that the equipment is elevated to the extent practical, is anchored to prevent flotation and resist flood forces, and is supplied by branch circuits that have ground-fault circuit-interrupter protection.

This modification ensures that pool, spa, and water feature equipment is installed safely in floodplain areas consistent with their design specifications.

You can read the additions to the code below. All changes have been underlined:

Section 1612 Flood Loads

Section 1612.4 Design and construction

The design and construction of buildings and structures located in flood hazard areas, including coastal high hazard areas and Coastal A Zones, shall be in accordance with Chapter 5 of ASCE 7 and with ASCE 24.

1612.4.2 Modification of ASCE 24 9.6 Pools.

Modify Section 9.6 in ASCE 24 by adding an exception as follows:

9.6 Pools. In-ground and above-ground pools shall be designed to withstand all flood-related loads and load combinations. Mechanical equipment for pools such as pumps, heating systems and filtering systems, and their associated electrical systems, shall comply with Chapter 7.

> **Exception**: Equipment for pools, spas and water features shall be permitted below the elevation required in Table 7-1, provided it is elevated to the extent practical, is anchored to prevent flotation and resist flood forces, and is supplied by branch circuits that have ground-fault circuit-interrupter protection.

Review Question

10. True or false? All equipment for pools, spas, and water features must comply with Section 9.6 in ASCE 24 without exception.

(a) True

(b) False

Conclusion

This concludes the course *Analysis of Changes to the Florida Building Code 7th Edition: An Advanced Course*. Please keep in mind that this course does not cover all of the changes from the 6th Edition of the Florida Building Code to the 7th Edition of the Florida Building Code. We have designed this course to cover some of the most significant changes, but we highly encourage building professionals to explore the resources provided by the Florida Building Commission to learn about additional changes. These resources include access to the Free, PDF Versions of the Building Code as well as materials related to the 2020 Update, including tracking charts. The 7th Edition of the Building Code went into effect on 12/31/2020. You can visit the Florida Building Commission's website here for more details: https://floridabuilding.org.

Thank you for joining us for this Advanced Florida Building Code Course. We hope that you enjoyed this course. See you next time!

Review Question ANSWERS

1. The inspection of exterior wall coverings shall include which of the following building components in progress inspections?

(a) Soffit coverings

(b) Roof coverings

(c) Exterior wall coverings and veneers

(d) Both (a) and (c) are correct

Explanation: See Section 110.3 Required inspections. In progress inspections for exterior wall coverings shall at a minimum include the following building components:

- *Exterior wall coverings and veneers*
- *Soffit coverings*

2. Which of the following would be considered a Wind-borne Debris Region?

(a) An area within 0.5 miles of the coastal mean high-water line where the ultimate design speed is 130 mph or greater

(b) An area within 0.5 miles of the coastal mean high-water line where the ultimate design speed is 100 mph or greater

(c) An area within 1.5 miles of the coastal mean high-water line where the ultimate design speed is 130 mph or greater

(d) None of the above

Explanation: WIND-BORNE DEBRIS REGION. ***.*** *Areas within hurricane-prone regions located: 1. Within 1 mile (1.61 km) of the coastal mean high-water line where the ultimate design wind speed,* V_{ult}, *is 130 mph (58 m/s) or greater.*

3. What is the minimum distance of projection from the property line if the Fire Separation Distance is less than 2 feet?

(a) 24 inches

(b) 36 inches

(c) 40 inches

(d) Projection is not permitted

Explanation: See TABLE 705.2 MINIMUM DISTANCE OF PROJECTION:

TABLE 705.2 MINIMUM DISTANCE OF PROJECTION

FIRE SEPARATION DISTANCE (FSD) (feet)	MINIMUM DISTANCE FROM LINE USED TO DETERMINE FSD
0 to less than 2	Projections not permitted

Review Question ANSWERS

4. Alternatives to sprinkler protection do NOT include:

(a) Constructing the attic of fire-retardant-treated wood

(b) Filling the attic with noncombustible insulation

(c) Construction a fire-separation wall at least 10 inches thick between the attic and the rest of the building

(d) Constructing the attic of noncombustible materials

Explanation: Alternatives to sprinkler protection include: Constructing the attic of noncombustible materials; Constructing the attic of fire-retardant-treated wood; or Filling the attic with noncombustible insulation.

5. According to [F]916.7 Gas sampling, the sample analysis for HPM gases shall be performed at intervals not exceeding ________ minutes.

(a) 30

(b) 40

(c) 60

(d) 10

Explanation: Gas sampling shall be performed continuously. Sample analysis shall be processed immediately after sampling, except as follows: 1. For HPM gases, sample analysis shall be performed at intervals not exceeding 30 minutes.

6. In the 7th Edition of the Florida Building Code, former Section 1407.11 has been deleted in its entirety.

(a) 1704.11

(b) 1407.11

(c) 1407.44

(d) None of the above

Explanation: In the 7th Edition of the Florida Building Code, former Sections 1407.11 through 1407.11.4.4 have been deleted in their entirety.

Review Question ANSWERS

7. Where felt underlayments are used without membrane/flashing strips applied over the joints in the roof deck, how many layer(s) are now required?

(a) one

(b) two

(c) three

(d) four

> *Explanation: Where felt underlayments are used without membrane/flashing strips applied over the joints in the roof deck, two layers are now required.*

8. Exceptions to Section 1507.1.1 *Underlayment* includes areas of a roof that cover which of the following?

(a) Exterior walkways

(b) Attached Garages

(c) Agricultural buildings

(d) Both (a) and (c)

> *Explanation: 1507.1.1 Underlayment. Exceptions: 1. For areas of a roof that cover exterior walkways and roofs of agricultural buildings, underlayment shall comply with the manufacturer's installation instructions.*

9. ASCE 7-16 provides a separate wind speed map for Risk Category III and Risk Category IV buildings to recognize the higher reliabilities required for which of the following facilities?

(a) Essential facilities

(b) Facilities who failure could pose a substantial hazard to the community

(c) Government facilities

(d) Both (a) and (b)

> *Explanation: ASCE 7-16 provides separate wind speed maps for Risk Category III and Risk Category IV buildings and other structures, recognizing the higher reliabilities required for essential facilities and facilities whose failure could pose a substantial hazard to the community.*

10. True or false? All equipment for pools, spas, and water features must comply with Section 9.6 in ASCE 24 without exception.

(a) True

(b) False

> *Explanation: Section 1612.4.2 Modification of ASCE 24 9.6 Pools.*

Final Exam

1. During building construction, when may the elements of an impervious-moisture-barrier system be concealed?

(a) After all elements have been inspected.

(b) After all elements have been inspected and approved.

(c) After confirmation that the balcony will not be exposed to water from direct rain.

(d) After the manufacturer has provided recommendations for the proper installation of the impervious-moisture-barrier system.

2. True or false? A self-contained gas detection and alarm device is NOT classified as a gas detection system.

(a) True

(b) False

3. Which of the following is NOT an acceptable response activated by a Gas Detection System according to the Code?

(a) Notifying a responsible person

(b) Activating an alarm signal

(c) Activating or deactivating equipment

(d) Disabling the automated sprinkler system

4. Which of the following would be considered a Wind-borne Debris Region?

(a) An area where the ultimate design wind speed, V_{ult}, is 140 mph or greater.

(b) An area where the ultimate design wind speed, V_{ult}, is 130 mph or greater.

(c) An area where the ultimate design wind speed, V_{ult}, is 120 mph or greater.

(d) An area where the ultimate design wind speed, V_{ult}, is 100 mph or greater.

5. The 7th Edition of the Florida Building Code was revised to correlate with ASCE 7-16 by including a reference to a new wind speed map as referenced in the definition of Wind-borne Debris Region. For *Risk Category* III health care facilities, the wind-borne debris region shall be based on which of the following maps?

(a) Figure 1609.3(1)

(b) Figure 1609.3(2)

(c) Figure 1609.3(3)

(d) Figure 1609.3(4)

6. According to the definition of Wind-borne Debris Region, Risk Category IV buildings and other structures, the wind-borne debris region shall be based on which of the following maps:

(a) Figure 1609.3(1)

(b) Figure 1609.3(2)

(c) Figure 1609.3(3)

(d) Figure 1609.3(4)

7. What is the minimum distance of projection from the property line if the Fire Separation Distance is 2 feet to less than 3 feet?

(a) 24 inches

(b) 36 inches

(c) 40 inches

(d) Projection is not permitted

8. What is the minimum distance of projection from the property line if the Fire Separation Distance is 5 feet or greater?

(a) 24 inches

(b) 36 inches

(c) 40 inches

(d) Projection is not permitted

9. Attics that are used or intended for which of the following purposes shall be protected by an automatic sprinkler system:

(a) Living purposes

(b) Storage

(c) Design aesthetic

(d) Both (a) and (b)

10. Which of the following is NOT an option for Group R-4 Condition 2 occupancy attics that are not required to have sprinklers?

(a) Provide a heat detector system throughout the attic that is arranged to activate the building fire alarm system.

(b) Construct the attic using semi-noncombustible materials.

(c) Construct the attic using fire-retardant-treated wood complying with Section 2303.2.

(d) Fill the attic with noncombustible insulation.

11. For toxic gases, sample analysis shall be performed at intervals not exceeding ____ minutes in accordance with the *Florida Fire Prevention Code*.

(a) 3 minutes

(b) 10 minutes

(c) 5 minutes

(d) 30 minutes

12. A gas detection alarm shall be initiated for flammable gases where any sensor detects a concentration of gas exceeding _____ percent of the lower flammability limit.

(a) 10 percent

(b) 15 percent

(c) 25 percent

(d) 50 percent

13. Where installed on buildings of Type I, II, III and IV construction, MCMs and MCM systems shall comply NFPA 285 for installations greater than 40 feet above grade plane.

(a) 20 feet

(b) 30 feet

(c) 40 feet

(d) 5 feet

14. According to Table 1507.1.1.1 *Underlayment with Self-Adhering Strips Over Roof Decking Joints*, which of the following types of underlayment are acceptable for asphalt shingles, but not wood shingles?

(a) ASTM D6757

(b) ASTM D4869 Type III or IV

(c) ASTM D226 Type II

(d) ASTM D922 Type I

15. According to Table 1507.1.1.1 *Underlayment with Self-Adhering Strips Over Roof Decking Joints,* if the roof slope is greater than 4:12, then underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped _____ inch(es); end laps shall be 6 inches and shall be offset by 6 feet.

(a) 1 inch

(b) 2 inches

(c) 3 inches

(d) 4 inches

16. True or false? According to Section 1510.7.1 *Wind resistance*, rooftop-mounted *photovoltaic* systems shall be designed for wind loads in accordance with ASCE 6.

(a) True

(b) False

17. Exception 4 for Section 1609.1.1 *Determination of wind loads* applies specifically to the design of which of the following?

(a) Photovoltaic systems

(b) Antennas

(c) Metal flagpoles

(d) Residential structures

18. According to Figure 1609.3(3), what is the ultimate design wind speed for Risk Category IV buildings and other structures in the majority of Sarasota County?

(a) 200 mph

(b) 190 mph

(c) 180 mph

(d) 170 mph

19. According to Figure 1609.3(3), what is the ultimate design wind speed for Risk Category IV buildings and other structures in the majority of Lake County?

(a) 150 mph

(b) 160 mph

(c) 170 mph

(d) 125 mph

20. According to Section 1612.4.2 *Modification of ASCE 24 9.6 Pools*, equipment for pools, spas and water features shall be permitted below the required elevation, provided that which of the following is true?

(a) The equipment is elevated to the extent practical

(b) The equipment is anchored to prevent flotation and resist flood forces

(c) The equipment is supplied by branch circuits that have ground-fault circuit-interrupter protection

(d) All of the above

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