



Architects

# Florida Building Code 8th Edition: Advanced Course

Course Number: AIAPDH250  
2 LU|HSW

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# FINAL EXAM ANSWER SHEET

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**\*\* See instructions on the inside cover page to submit your exams and pay for your course.**

## *Florida Building Code • 8th Edition: Advanced Course* **FINAL EXAM pages 3–4**

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**FLORIDA BUILDING CODE 8th EDITION:  
ADVANCED COURSE  
FINAL EXAM**

1. Interior Finishes Section \_\_\_\_\_ Artificial Decorative Vegetation on Buildings in Outdoor Occupancies was added to the 8th Edition of the Florida Building Code.
  - a. 806
  - b. 807
  - c. 809
  - d. 812
2. A Balanced Door is a door equipped with \_\_\_\_\_ hardware designed as to cause a semicounterbalanced swing action when opening.
  - a. Single-Pivoted
  - b. Double-Pivoted
  - c. Triple-Pivoted
  - d. None of the above
3. According to section 1010.1.2, one of the exceptions listed is: Private garages, office areas, factory and storage areas with an occupant load of \_\_\_ or less.
  - a. 10
  - b. 15
  - c. 20
  - d. 25
4. Which type of bolt is defined as: Door-locking hardware with a bolt which is extended and retracted by action of the lock mechanism?
  - a. Automatic Flush Bolt
  - b. Constant Latching Bolt
  - c. Dead Bolt
  - d. Manual Bolt
5. According to section 101.2.3: Door handles, pulls, latches, locks and other operating devices shall be installed \_\_\_\_\_ inches minimum and \_\_\_\_\_ inches maximum above the finished floor.
  - a. 32; 46
  - b. 32; 48
  - c. 34; 46
  - d. 34; 48
6. According to section 1010.2.4, doors from individual dwelling or sleeping units of Group R occupancies having an occupant load of \_\_\_ or less are permitted to be equipped with a night latch, dead bolt or security chain.
  - a. 5
  - b. 10
  - c. 15
  - d. 20
7. According to section 1010.2.4, Locking devices are permitted on doors to balconies, decks or other exterior spaces of \_\_\_\_\_ square feet or less serving a private office space.
  - a. 100
  - b. 200
  - c. 250
  - d. 300
8. According to section 1405.14.2 Accessories, accessories \_\_\_\_\_ be installed in accordance with the approved manufacturer instructions should
  - a. can
  - b. must
  - c. shouldn't
  - d.
9. According to section 1410.2, Soffits and fascias shall be capable of resisting the component and cladding loads for walls determined in accordance with Chapter 16 using an effective wind area of \_\_\_\_\_ square feet.
  - a. 10
  - b. 15
  - c. 20
  - d. 25
10. According to section 1410.4, Fiber-cement soffit panels shall comply with Section 1410.2 and shall be a minimum of \_\_\_\_\_ in thickness.
  - a. 1/8 inch
  - b. 1/4 inch
  - c. 3/8 inch
  - d. 1/2 inch

11. According to table 1410.6, a maximum design pressure of 60 using a nail type of 6d box should have a fastener of spacing for stainless steel of \_\_\_\_\_ inches.
- 3
  - 4
  - 5
  - 6
12. According to section 1410.7.5, fascia shall be wrapped (\_\_\_\_\_) around and extend at least 1 inch beyond the corner.
- folded
  - tabbed
  - sheathed
  - packed
13. In Equation 16-19, which variable represents the Ponding head equal to the depth of water due to deflections of the roof subjected to unfactored rain load and unfactored dead load in inches (mm).
- $d_h$
  - $d_p$
  - $d_s$
  - R
14. When was Florida's Senate Bill 4-D passed?
- June 24, 2021
  - December 13, 2021
  - February 28, 2022
  - May 27, 2022
15. Bill 4-D requires condominium associations and cooperative associations to complete a structural integrity reserve study every 10 years for each building in an association that is \_\_\_\_\_ stories or higher in height.
- two
  - three
  - four
  - five

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## INTRODUCTION

Welcome! This 2-hour Florida Building Code 8<sup>th</sup> Edition Advanced Course discusses many highlights and changes from the previous Florida Building Code 7<sup>th</sup> Edition. While completing this course, it is especially important to note that the Florida Building Code 7<sup>th</sup> Edition was based on the 2018 International Building Code, while the Florida Building Code 8<sup>th</sup> Edition is based on the 2021 International Building Code. The Florida Building Code 8<sup>th</sup> Edition is scheduled to replace the Florida Building Code 7<sup>th</sup> Edition on 12/31/2023.

The *Florida Building Code 8<sup>th</sup> Edition: 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.

This course is designed to cover some of the significant changes from the 7<sup>th</sup> Edition to the 8<sup>th</sup> Edition of the Code. However, this course 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 8 – INTERIOR FINISHES

### Section 809 Artificial Decorative Vegetation on Buildings and in Outdoor Occupancies

Chapter 8 – *Interior Finishes* Section 809 *Artificial Decorative Vegetation on Buildings and In Outdoor Occupancies* was added to the 8<sup>th</sup> Edition of the Florida Building Code. This additional section addresses the fire concern regarding the growing use of decorative artificial plants in various locations, including occupied roofs, interior courtyards within buildings, and outdoor spaces such as Group A-5 stadiums. When plastic materials within these decorative plants ignite, there is a potential for fire to spread to nearby structures, as was evident when artificial palm trees on the pool deck of the Las Vegas Cosmopolitan Hotel caught fire in July 2015.



*Xtremely Tropical, CC BY 2.0, via Flickr*

Currently, the International Building Code (IBC) and International Fire Code (IFC) only address the regulation of decorative artificial vegetation in buildings through Section 807.4, added in the last code revision cycle. However, the fire hazards associated with such vegetation are just as critical in outdoor settings as indoors.

The code addition includes testing requirements aligning to NFPA 701 or NFPA 289, the prohibition of using unlisted electrical wiring and lighting on decorative vegetation, and any electrical wiring and lighting on all metal trees, along with stating ignition sources and maintenance of the vegetation be in accordance with the Florida Fire Prevention Code.

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

#### **Section 809 Artificial Decorative Vegetation on Buildings and In Outdoor Occupancies**

##### **809.1 General.**

Fixed artificial decorative vegetation placed in outdoor occupancies or on an occupied roof of a building shall comply with this section.

##### **809.2 Testing.**

Artificial decorative vegetation shall meet the flame propagation performance criteria of the Test Method 1 or Test Method 2, as appropriate, of NFPA 701. Meeting such criteria shall be documented and certified by the manufacturer in an approved manner. Alternatively, the artificial decorative vegetation shall be tested in accordance with NFPA 289, using the 20-kW ignition source, and shall have a maximum heat release rate of 100 kW.

##### **809.3 Electrical fixtures and wiring.**

The use of unlisted electrical wiring and lighting on artificial decorative vegetation shall be prohibited. The use of electrical wiring and lighting on artificial trees constructed entirely of metal shall be prohibited.

#### **809.4 Ignition sources and maintenance.**

Ignition sources and maintenance of outdoor artificial vegetation shall be in accordance with the *Florida Fire Prevention Code*.

### REVIEW QUESTION

1. According to Section 809.2, alternatively, the artificial decorative vegetation shall be tested in accordance with the NFPA 289, using the \_\_\_\_\_ ignition source, and shall have a maximum heat release rate of 100 kW.
  - a. 15 kW
  - b. 20 kW
  - c. 25 kW
  - d. 30 kW

## CHAPTER 10 – MEANS OF EGRESS

### Section 1010 – Doors, Gates, and Turnstiles

Section 1010 *Doors, Gates, and Turnstiles* underwent a reorganization in the 8<sup>th</sup> Edition of the Florida Building Code. The ICC Building Code Action Committee submitted the reorganization suggestion, which the Florida Building Commission approved. This reorganization didn't include technical changes but instead grouped similar items, offering improved organization, more coherent grouping, and consolidation. There were also some technical changes proposed for Section 1010.1 *General*. The course will highlight some but not all of the changes to this section.



#### **Section 1010.1 – General**

The name of Section 1010.1 was changed from Door to General as that is the standard naming convention at the start of a section. The text in Section 1010.1 *General* was updated to be more specific, helping to call out the section-covered doors, gates, and turnstiles and adding more specifics on the section references that align with the reorganization of Section 1010.

Here are the changes to 1010.1 General. All changes have been underlined:

##### **1010.1 General.**

Doors in the means of egress shall comply with the requirements of Sections 1010.1.1 through 1010.3.5. Exterior exit doors shall also comply with the requirements of Section 1022.2. Gates in the means of egress shall comply with the requirements of Sections 1010.4 through 1010.4.1. Turnstiles in the means of egress shall comply with the requirements of Sections 1010.5 through 1010.5.4.

Doors, gates and turnstiles provided for egress purposes in numbers greater than required by this code shall comply with the requirements of this section.

Doors in the means of egress 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.

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

## Section 1010.1.2 – Door Swing

Another approved change was to Section 1010.1.2 *Door swing*. The section was renamed to Section 1010.1.2 *Egress door types* and was updated to include balanced doors with the other swinging door types allowed and used as a means of egress. Subsection 10.10.1.2.1 *Direction of swing* was also updated to include balanced doors.

Balanced doors were initially designed to address challenges posed by strong winds in regions with high-rise buildings experiencing stack pressure. Their design uses the pressure difference between the interior and exterior to facilitate door opening effortlessly. Balanced doors are mostly used as exterior entrance doors to public or commercial buildings.

For reference, here is the FBC definition of a balanced door:

**BALANCED DOOR.** A door equipped with double-pivoted hardware so designed as to cause a semicounterbalanced swing action when opening.

The requirements for panic hardware on balanced doors are addressed in Section 1010.2.9.4 *Balanced doors*, of the Florida Building Code 7<sup>th</sup> edition, but balanced doors were not explicitly stated in Section 1010.1.2 *Door swing*. These changes help clarify that the code intends that balanced doors are acceptable for doors in the means of egress. The section references were also updated to accommodate the previously mentioned reorganization.

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

### 1010.1.2 Egress door types.

Egress doors shall be of the side-hinged swinging door, pivoted door or balanced door types.

#### Exceptions:

1. Private garages, office areas, factory and storage areas with an *occupant load* of 10 or less.
2. Group I-3 occupancies used as a place of detention.
3. Critical or intensive care patient rooms within suites of health care facilities.
4. Doors within or serving a single *dwelling unit* in Groups R-2 and R-3.
5. In other than Group H occupancies, revolving doors complying with Section 1010.3.1.
6. In other than Group H occupancies, special purpose horizontal sliding, accordion or folding door assemblies complying with Section 1010.3.3.
7. Power-operated doors in accordance with Section 1010.3.2.
8. Doors serving a bathroom within an individual *sleeping unit* in Group R-1.
9. In other than Group H occupancies, manually operated horizontal sliding doors are permitted in a *means of egress* from spaces with an *occupant load* of 10 or less.

### 1010.1.2.1 Direction of swing.

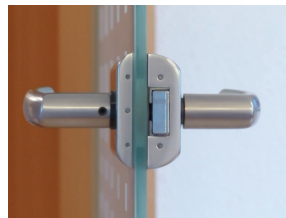
Side-hinged swinging doors, pivoted doors and balanced doors shall swing in the direction of egress travel where serving a room or area containing an occupant load of 50 or more persons or a Group H occupancy.

## REVIEW QUESTION

2. **True or False: Doors in means of egress shall be readily distinguishable from the adjacent construction and finishes such that the doors are easily recognizable as doors.**
  - a. True
  - b. False

## Section 1010.1.3 – Forces to Unlatch and Open Doors

In 2023, Section 1010.1.3 *Forces to unlatch and open doors* was updated to clarify the maximum forces allowed to unlatch and open doors. In the 7<sup>th</sup> Edition of the Florida Building Code, the requirements of Section 1010.1.3 *Door opening forces*, the maximum unlatching forces were not explicitly stated and were a bit ambiguous. In the 8<sup>th</sup> Edition of the Florida Building Code, the section was renamed to *Forces to unlatch and open doors*. The maximum forces were explicitly stated in compliance with the 2017 edition of the ICC A117.1. Section 1010.1.3.2 *Manual horizontal sliding doors* was also updated, a small change specifically including that a door shouldn't rebound into a partially open position after it is closed.



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

### 1010.1.3 Forces to unlatch and open doors.

The forces to unlatch doors shall comply with the following:

1. Where door hardware operates by push or pull, the operational force to unlatch the door shall not exceed 15 pounds (66.7N).
2. Where door hardware operates by rotation, the operational force to unlatch the door shall not exceed 28 inch-pounds (315 N-cm).

The forces to open doors shall comply with the following:

1. For interior swinging egress doors that are manually operated, other than doors required to be fire rated, the force for pushing or pulling open the door shall not exceed 5 pounds (22 N).
2. For other swinging doors, sliding doors or folding doors, and doors required to be fire rated, the door shall require not more than a 30-pound (133 N) force to be set in motion and shall move to a full open position when subjected to not more than a 15- pound (67 N) force.

### 1010.1.3.1 Location of applied forces.

Forces shall be applied to the latch side of the door.

### 1010.1.3.2 Manual horizontal sliding doors.

Where a manual horizontal sliding door is required to latch, the latch or other mechanism shall prevent the door from rebounding into a partially open position when the door is closed.

## REVIEW QUESTION

3. According to Section 1010.1.3, the forces to unlatch doors shall comply with which of the following:
- Where door hardware operates by push or pull, the operational force to unlatch the door shall not exceed 15 pounds (66.7N).
  - Where door hardware operates by rotation, the operational force to unlatch the door shall not exceed 28 inch-pounds (315 N-cm).
  - Both a and b.
  - None of the above

## Section 1010.2 – Door Operations/202 Definitions

It was believed that The Florida Building Code 7<sup>th</sup> Edition was somewhat confusing regarding dead bolts, manual bolt locks, and automatic flush bolts, leading to considerable differences in the interpretation and applications of the code. The updates to the 8<sup>th</sup> edition of the code include 4 new definitions for an automatic flush bolt, constant latching bolt, dead bolt, and manual bolt, and revisions to the sections where these hardware items are addressed, including adding a new table. The text revisions and new table, Table 10.2.4 *Manual Bolts, Automatic Flush Bolts and Constant Latching Bolts on the Inactive Leaf of a Pair of Doors*, simplify the complexity of where dead bolts and manual bolts are prohibited and permitted; and where manual bolts, automatic flush bolts, and constant latching bolts are permitted on the inactive leaf of a pair of doors. These revisions are based on revisions that were approved for the 2024 IBC.



The revisions include technical changes and additions not previously included in the 7<sup>th</sup> Edition of The Florida Building Code.

- In Group I-1, Condition 2, and Group I-2, occupancies where the clinical needs of persons receiving care require containment or where persons receiving care pose a security threat, provided that all clinical staff can readily always unlock doors. All such locks are keyed to keys carried by all clinical staff at all times, or all clinical staff have the codes or other means necessary to operate the locks at all times.
- For Group I-2 health care occupancies, manual bolt locks are not permitted for use on corridor doors where the door is required to be positive latching.

- Included a specific differentiation between doors required to be fire-rated and comply with Section 716 *Opening Protectives* or not. Some hardware options are not permitted on doors that must comply with section 716 *Opening Protectives*.
- Added the details that manual bolts, automatic flush bolts, and constant latching bolts on the inactive leaf of a pair of doors in accordance with Table 1010.2.4, provided that the inactive leaf does not have a doorknob, panic hardware or similar operating hardware.
- Manual bolts, automatic bolts, and constant latching are permitted for storage and equipment rooms where the inactive leaf is not needed to meet egress capacity requirements.

The following definitions have been added Chapter 2– Definitions of the Florida Building Code 8<sup>th</sup> Edition, Building. The new terms and definitions have been underlined.

**AUTOMATIC FLUSH BOLT.** Door-locking hardware, installed on the inactive leaf of a pair of doors, which has a bolt that is extended automatically into the door frame or floor when the active leaf is closed after the inactive leaf, and which holds the inactive leaf in a closed position. When the active leaf is opened, the automatic flush bolt retracts the bolt or rod allowing the inactive leaf to be opened (see CONSTANT LATCHING BOLT, DEAD BOLT, MANUAL BOLT).

**CONSTANT LATCHING BOLT.** Door-locking hardware installed on the inactive leaf of a pair of doors, which has a bolt that automatically latches into the door frame or the floor, and which holds the inactive leaf in a closed position. The latch bolt is retracted manually to allow the inactive leaf to be opened (see AUTOMATIC FLUSH BOLT, DEAD BOLT, MANUAL BOLT).

**DEAD BOLT.** Door-locking hardware with a bolt which is extended and retracted by action of the lock mechanism (see AUTOMATIC FLUSH BOLT, CONSTANT LATCHING BOLT, MANUAL BOLT).

**MANUAL BOLT.** Door-locking hardware operable from one side of the door, or from the edge of a door leaf, with a bolt or rod extended and retracted by manual movement of the bolt or rod, such as a manual flush bolt or manual surface bolt (see AUTOMATIC FLUSH BOLT, CONSTANT LATCHING BOLT, DEAD BOLT).

You can read the full modifications to Section 1010.2 *Door Operations* below. All changes have been underlined:

### 1010.2 Door operations.

Except as specifically permitted by this section, egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort.

#### 1010.2.1 Unlatching.

The unlatching of any door or leaf shall not require more than one operation. Manual bolts are not permitted.

#### Exceptions:

- Places of detention or restraint.
- Doors with manual bolts, automatic flush bolts, and constant latching bolts as permitted by Section 1010.2.4, Item 4.
- Doors from individual dwelling units and sleeping units of Group R occupancies as permitted by Section 1010.2.4, Item 5.

#### 1010.2.2 Hardware.

Door handles, pulls, latches, locks and other operating devices on doors required to be *accessible* by Chapter 11 shall not require tight grasping, tight pinching or twisting of the wrist to operate.

### 1010.2.3 Hardware height.

Door handles, pulls, latches, locks and other operating devices shall be installed 34 inches (864 mm) minimum and 48 inches (1219 mm) maximum above the finished floor. Locks used only for security purposes and not used for normal operation are permitted at any height.

**Exception:** Access doors or gates in barrier walls and fences protecting pools, spas and hot tubs shall be permitted to have operable parts of the release of latch on self-latching devices at 54 inches (1370 mm) maximum above the finished floor or ground, provided the self-latching devices are not also self-locking devices operated by means of a key, electronic opener or integral combination lock.

### 1010.2.4 Locks and latches.

Locks and latches shall be permitted to prevent operation of doors where any of the following exist:

1. Places of detention or restraint.
2. In Group I-1, Condition 2 and Group I-2 occupancies where the clinical needs of persons receiving care require containment or where persons receiving care pose a security threat, provided that all clinical staff can readily unlock doors at all times, and all such locks are keyed to keys carried by all clinical staff at all times or all clinical staff have the codes or other means necessary to operate the locks at all times.
3. In buildings in occupancy Group A having an occupant load of 300 or less, Groups B, F, M and S, and in places of religious worship, the main door or doors are permitted to be equipped with key-operated locking devices from the egress side provided:
  - 3.1. The locking device is readily distinguishable as locked.
  - 3.2. A readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED. The sign shall be in letters 1 inch (25 mm) high on a contrasting background.
  - 3.3. The use of the key-operated locking device is revocable by the building official for due cause.
4. Manual bolts, automatic flush bolts, and constant latching bolts on the inactive leaf of a pair of doors in accordance with Table 1010.2.4, provided that the inactive leaf does not have a doorknob, panic hardware, or similar operating hardware.
5. Doors from individual dwelling or sleeping units of Group R occupancies having an occupant load of 10 or less are permitted to be equipped with a night latch, dead bolt or security chain, provided such devices are openable from the inside without the use of a key or tool.
6. Fire doors after the minimum elevated temperature has disabled the unlatching mechanism in accordance with listed fire door test procedures.
7. Doors serving roofs not intended to be occupied shall be permitted to be locked, preventing entry to the building from the roof, provided that when accessing the roof from the building the locks do not automatically lock, preventing re-entry into the building from the roof.
8. Other than egress courts, where occupants must egress from an exterior space through the building for means of egress, exit access doors shall be permitted to be equipped with an approved locking device where installed and operated in accordance with all of the following:

- 8.1. The maximum occupant load shall be posted where required by Section 1004.9. Such signage shall be permanently affixed inside the building and shall be posted in a conspicuous space near all the exit access doorways.
- 8.2. A weatherproof telephone or two-way communication system installed in accordance with Section 1009 shall be located adjacent to not less than one required exit access door on the exterior side.
- 8.3. The egress door locking device is readily distinguishable as locked and shall be a keyoperated locking device.
- 8.4. A clear window or glazed door opening, not less than 5 square feet (0.46 m<sup>2</sup>) in area, shall be provided at each exit access door to determine if there are occupants using the outdoor area.
- 8.5. A readily visible, durable sign shall be posted on the interior side on or adjacent to each locked required exit access door serving the exterior area stating, "THIS DOOR TO REMAIN UNLOCKED WHEN THE OUTDOOR AREA IS OCCUPIED." The letters on the sign shall be not less than 1 inch (25.4 mm) high on a contrasting background.
- 8.6. The occupant load of the occupied exterior area shall not exceed 300 occupants in accordance with Section 1004.
9. Locking devices are permitted on doors to balconies, decks or other exterior spaces serving individual dwelling or sleeping units.
10. Locking devices are permitted on doors to balconies, decks or other exterior spaces of 250 square feet (23.23 m<sup>2</sup>) or less serving a private office space.

**TABLE 1010.2.4**  
**MANUAL BOLTS, AUTOMATIC FLUSH BOLTS AND CONSTANT**  
**LATCHING BOLTS ON THE INACTIVE LEAF OF A PAIR OF DOORS**

APPLICATION WITH A PAIR OF DOORS WITH AN ACTIVE LEAF AND INACTIVE LEAF	THE PAIR OF DOORS ARE REQUIRED TO COMPLY WITH SECTION 716	PERMITTED USES OF MANUAL BOLTS, AUTOMATIC FLUSH BOLTS, AND CONSTANT LATCHING BOLTS ON THE INACTIVE LEAF OF A PAIR OF DOORS		
		SURFACE OR FLUSH MOUNTED MANUAL BOLTS	AUTOMATIC FLUSH BOLTS	CONSTANT LATCHING BOLTS
Group B, F or S occupancies with occupant load less than 50	No	P	P	P
	Yes	NP	NP <sup>b</sup>	P
Group B, F or S occupancies where the building is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1 and the inactive leaf is not needed to meet egress capacity requirements	No	P	P	P
	Yes	NP	NP <sup>b</sup>	P
Group I-2 patient care rooms where the inactive leaf is not needed to meet egress capacity requirements	No	NP	NP <sup>b</sup>	P
	Yes	NP	NP <sup>b</sup>	P
Any occupancy where panic hardware is not required, egress doors are used in pairs and both leaves are required to meet egress capacity requirements	No	NP	P	NP
	Yes	NP	NP <sup>b</sup>	NP
Storage or equipment rooms where the inactive leaf is not needed to meet egress capacity requirements	No	P <sup>a</sup>	P	P
	Yes	P <sup>a</sup>	P	P

*P = Permitted; NP = Not Permitted.*

*a. Not permitted on corridor doors in Group I-2 healthcare occupancies where corridor doors are required to be positive latching.*

*b. Permitted where both doors are self-closing or automatic-closing and are provided with a coordinator that causes the inactive leaf to be closed prior to the active leaf.*

## REVIEW QUESTION

4. True or False: According to section 1010.2.1, the unlatching of any door or leaf shall not require more than one operation. Manual bolts are not permitted. (With some exceptions).
  - a. True
  - b. False

## CHAPTER 14 – EXTERIOR WALLS

### Section 1405 Installation of Wall Coverings

In the 8th Edition of the Florida Building Code, Sections 1405.14 *Vinyl siding* and 1405.18 *Polypropylene siding* of Chapter 14 were expanded, adding important installation elements. These additions help ensure correct installation to ensure proper performance.

Product performance failures have been observed during high wind events due to incorrectly installed systems.

#### 1405.14 Vinyl Siding

Section 1405.14 *Vinyl siding* has updated the general information, complying with ASTM D3679 and Section 1609 of the 8th edition of the building code. The application section was broken out into specific parts, offering focused details of each.

1. Fasteners and fastener penetration for wood construction
2. Light-frame construction.
3. Fastener spacing.



Peter Rockwood, CC BY-SA 4.0, via Wikimedia Commons

The additional Accessories subsections include details indicating that the accessories are installed using the approved manufacturer's instructions and details on the starter strip and utility trim. The starter strip and utility trim are two critical applications within the wind performance system that are important to highlight.

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

#### [BS] 1405.14 Vinyl siding.

Vinyl siding conforming to the requirements of this section and complying with ASTM D3679 shall be permitted on exterior walls where the design wind pressure determined in accordance with Section 1609 does not exceed 30 pounds per square foot (1.44 kN/m<sup>2</sup>). Where the design wind pressure exceeds 30 pounds per square foot (1.44 kN/m<sup>2</sup>), tests or calculations indicating compliance with Chapter 16 shall be submitted. Vinyl siding shall be secured to the building so as to provide weather protection for the exterior walls of the building.

#### [BS]1405.14.1 Application.

The siding shall be applied over sheathing or materials listed in Section 2304.6. Siding shall be applied over a water-resistive barrier in accordance with requirements in Section 1404. Siding and accessories shall be installed in accordance with the approved manufacturer's instructions.

#### 1405.14.1.1 Fasteners and fastener penetration for wood construction.

Unless otherwise specified in the approved manufacturer's instructions, nails used to fasten the siding and accessories shall be corrosion resistant and have a minimum 0.313-inch (7.9 mm) head diameter and 1/8-inch (3.18 mm) shank diameter. The penetration into nailable substrate shall be not less than at least 1 1/4 inches (32 mm).

#### 1405.14.1.2 Fasteners and fastener penetration for cold-formed steel light-frame construction.

For coldformed steel light-frame construction, corrosion resistant fasteners shall be used. Screw fasteners shall penetrate through the steel with a minimum of three exposed threads. Other fasteners shall be installed in accordance with the approved construction documents and manufacturer's instructions.

#### 1405.14.1.3 Fastener spacing.

Unless specified otherwise by the approved manufacturer's instructions, fasteners shall be installed in the middle third of the slots of the nail hem and maximum spacing between fasteners shall be 16 inches (406 mm) for horizontal siding and 12 inches (305 mm) for vertical siding.

#### 1405.14.2 Accessories.

Accessories must be installed in accordance with the approved manufacturer's instructions.

#### 1405.14.2.1 Starter strip.

Horizontal siding shall be installed with a starter strip at the initial course at any location.

#### 1405.14.2.2 Utility trim.

Under windows, and at top of walls, utility trim shall be used with snap locks.

## REVIEW QUESTION

5. According to 1405.14, Vinyl siding shall be permitted on \_\_\_\_\_ walls where the design wind pressure does not exceed 30 pounds per square foot.
  - a. interior walls
  - b. exterior walls
  - c. vertical walls
  - d. any walls

### 1405.18 Polypropylene Siding

Standard installation procedures for horizontal polymeric cladding have been added to the 8<sup>th</sup> edition of the Florida Building Code. It was also observed that the 7<sup>th</sup> edition of the code needed more information regarding proper nail size, spacing uniqueness, and the need for the installation over a proper nailable substrate. The additions to section 1405.18 *Polypropylene siding* also address these gaps.

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

## **[BS] 1405.18 Polypropylene Siding**

Polypropylene siding conforming to the requirements of this section and complying with Section 1404.12 shall be limited to exterior walls of Type VB construction located in areas where the wind speed specified in Chapter 16 does not exceed 100 miles per hour (45 m/s) and the building height is less than or equal to 40 feet (12 192 mm) in Exposure C. Where construction is located in areas where the basic wind speed exceeds 100 miles per hour (45 m/s), or building heights are in excess of 40 feet (12 192 mm), tests or calculations indicating compliance with Chapter 16 shall be submitted. Polypropylene siding shall be installed in accordance with the manufacturer's instructions. Polypropylene siding shall be secured to the building so as to provide weather protection for the exterior walls of the building.

### **[BS]1405.18.1 Installation.**

Unless otherwise specified in the approved manufacturer's instructions, polypropylene siding and accessories shall be installed over and attached to wood structural panel sheathing with a minimum thickness of  $\frac{7}{16}$  inch (11.1 mm), or another nailable substrate.

#### **[BS]1405.18.1.1 Accessories.**

Accessories shall be installed in accordance with the approved manufacturer's instructions.

#### **[BS]1405.18.1.1.1 Starter strip.**

Horizontal siding shall be installed with a starter strip at the initial course at any location.

#### **[BS]1405.18.1.1.2 Under windows and top of walls.**

Where nail hem is removed such as under windows and at top of walls, nail slot punch or predrilled holes shall be constructed.

### **[BS]1405.18.2 Fastener requirements.**

Unless otherwise specified in the approved manufacturer's instructions, nails shall be corrosion resistant, with a minimum 0.120-inch (3 mm) shank and minimum 0.313-inch (8 mm) head diameter. Nails shall be a minimum of  $1\frac{1}{4}$  inches (32 mm) long or as necessary to penetrate sheathing or nailable substrate not less than  $\frac{3}{4}$  inch (19.1 mm). Where the nail fully penetrates the sheathing or nailable substrate, the end of the fastener shall extend not less than  $\frac{1}{4}$  inch (6.4 mm) beyond the opposite face of the sheathing or nailable substrate. The spacing of fasteners shall conform to the approved manufacturer's instructions.

## **Section 1410 Soffits and Fascias at Roof Overhangs**

Another substantial change to the Florida Building Code is a newly created Section 1410 *Soffits and Fascias at Roof Overhangs*, added to Chapter 14: *Exterior Walls*. This new section offers new language addressing common soffit materials, a prescription option for wood structural soffits, and fascia installation.

This addition to the code enhances the wind resistance capabilities of soffits under high-wind conditions. These changes make installation requirements for commonly used manufactured soffits more explicit within the 8<sup>th</sup> Edition of the Florida Building Code and ASCE 7. They offer a clear set of guidelines for wooden structural panel soffits to meet the design wind pressure standards outlined in these codes.

An important addition to the code pertains to the installation requirements for fascias. The 7<sup>th</sup> Edition of the Florida Building Code didn't include specific guidelines for installing fascia at the eaves and rakes, which requires attention within the code. It has

been recognized as a point of weakness susceptible to damage during high-wind events. This vulnerability is exemplified by instances documented in FEMA MAT reports, such as those from Hurricane Harvey and Hurricane Irma. These reports highlight that the leading edge of the roof system, encompassing soffits and fascia, is particularly at risk in the face of strong winds. Furthermore, multiple instances of fascia failure appeared to trigger damage to soffits and roof coverings.

These updated code requirements have been established following recent testing conducted by the Vinyl Siding Institute (VSI). When dealing with lower design wind pressures, it is acceptable to install aluminum fascia using just one fastener at the leg if there is a 1-inch or greater coverage at the drip edge. However, for higher design wind pressures, the fascia must be secured with two fasteners, one at the face and one at the leg. Alternatively, utility trim and punch locks at the drip edge are also permitted. Additionally, similar code changes are being proposed for the IBC and IRC.

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

## **SECTION 1410 SOFFITS AND FASCIAS AT ROOF OVERHANGS.**

### **1410.1 General.**

Soffits and fascias at roof overhangs shall be designed and constructed in accordance with the applicable provisions of this section.

### **1410.2 General wind requirements.**

Soffits and fascias shall be capable of resisting the component and cladding loads for walls determined in accordance with Chapter 16 using an effective wind area of 10 square feet (0.93 m<sup>2</sup>).

### **1410.3 Vinyl and aluminum soffit panels.**

Vinyl and aluminum soffit panels shall comply with Section 1410.2 and shall be installed using fasteners specified by the manufacturer and shall be fastened at both ends to a supporting component such as a nailing strip, fascia or subfascia component in accordance with Figure 1410.3.1(1). Where the unsupported span of soffit panels is greater than 12 inches (406 mm), intermediate nailing strips shall be provided in accordance with Figure 1410.3.1(2) unless a larger span is permitted in accordance with the manufacturer's product approval specification and limitations of use. Vinyl and aluminum soffit panels shall be installed in accordance with the manufacturer's product approval specification and limitations of use. Fasteners shall be corrosion resistant. Fascias shall comply with Section 1410.7 and the manufacturer's product approval specification and limitations of use. In the HVHZ, vinyl and aluminum soffit panels shall also comply with TAS 202 and TAS 203.

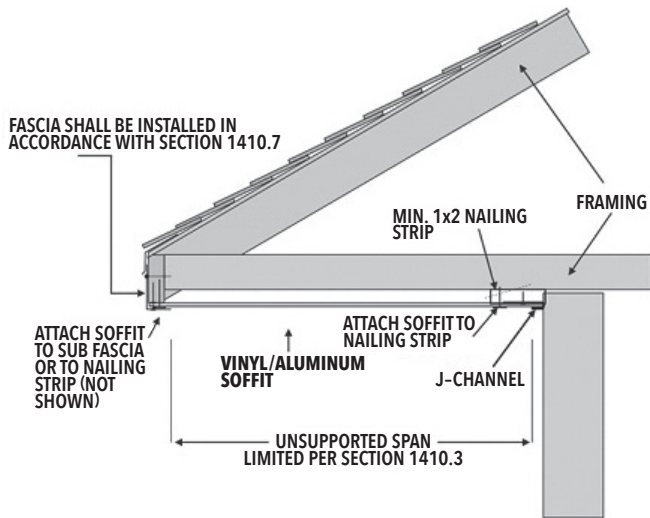


FIGURE 1410.3(1)

TYPICAL SINGLE-SPAN VINYL OR ALUMINUM SOFFIT PANEL SUPPORT

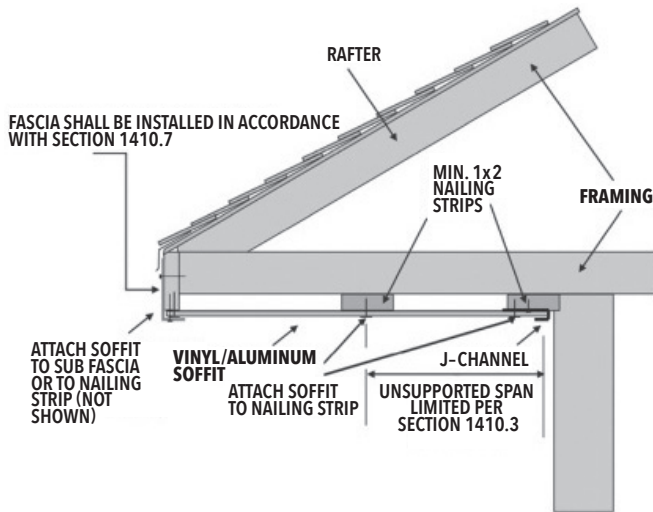


FIGURE 1410.3(2)

TYPICAL MULTI-SPAN VINYL OR ALUMINUM SOFFIT PANEL SUPPORT

#### 1410.4 Fiber-cement soffit panels.

Fiber-cement soffit panels shall comply with Section 1410.2 and shall be a minimum of  $\frac{1}{4}$  inch (6.4 mm) in thickness and comply with the requirements of ASTM C1186, Type A, minimum Grade II, or ISO 8336, Category A, minimum Class 2. Panel joints shall occur over framing or over wood structural panel sheathing. Soffit panels shall be installed with spans and fasteners in accordance with the manufacturer's product approval specification and limitations of use. Fasteners shall be corrosion resistant. In the HVHZ, fiber-cement soffit panels shall also comply with TAS 202 and TAS 203.

#### 1410.5 Hardboard soffit panels.

Hardboard soffit panels shall comply with Section 1410.2 and shall be not less than  $\frac{7}{16}$  inch (11.11 mm) in thickness and fastened to framing or nailing strips to meet the required design wind pressures. Where the design wind pressure is 30 psf (1.44 kPa) and less, hardboard soffit panels are permitted to be attached to wood framing with  $2\frac{1}{2}$ -inch by 0.113-inch (64 mm by 2.9 mm) siding nails spaced not more than 6 inches (152 mm) on center at panel edges and 12 inches (305 mm) on center at intermediate supports. Where the design wind pressure is greater than 30 psf (1.44 kPa), hardboard soffit panels shall be installed in accordance with the manufacturer's product approval specification and limitations of use. Fasteners shall be corrosion resistant. In the HVHZ, hardboard soffit panels shall also comply with TAS 202 and TAS 203.

#### 1410.6 Wood structural panel soffit.

Wood structural panel soffits shall comply with Section 1410.2 and shall have a minimum panel performance category of  $\frac{3}{8}$ . Fasteners shall be corrosion resistant. Alternatively, wood structural panel soffits are permitted to be attached to wood framing in accordance with Table 1410.6.

**TABLE 1410.6**  
**PRESCRIPTIVE ALTERNATE FOR WOOD STRUCTURAL PANEL SOFFIT<sup>b,c,d,e</sup>**

MAXIMUM DESIGN PRESSURE (- OR + PSF)	MINIMUM PANEL SPAN RATING	MINIMUM PANEL PERFORMANCE CATEGORY	NAIL TYPE AND SIZE (INCHES)	FASTENER <sup>a</sup> SPACING ALONG EDGES AND INTERMEDIATE SUPPORTS (INCHES)	
				GALVANIZED STEEL	STAINLESS STEEL
<u>30</u>	<u>24/0</u>	<u>3/8</u>	<u>6D BOX</u> <u>(2 × 0.099 × 0.266</u> <u>HEAD DIAMETER)</u>	<u>6<sup>f</sup></u>	<u>4</u>
<u>40</u>	<u>24/0</u>	<u>3/8</u>	<u>6D BOX</u> <u>(2 × 0.099 × 0.266</u> <u>HEAD DIAMETER)</u>	<u>6</u>	<u>4</u>
<u>50</u>	<u>24/0</u>	<u>3/8</u>	<u>6D BOX</u> <u>(2 × 0.099 × 0.266</u> <u>HEAD DIAMETER)</u>	<u>4</u>	<u>4</u>
			<u>8D COMMON</u> <u>(2.5 × 0.131 × 0.281</u> <u>HEAD DIAMETER)</u>	<u>6</u>	<u>6</u>
<u>60</u>	<u>24/0</u>	<u>3/8</u>	<u>6D BOX</u> <u>(2 × 0.099 × 0.266</u> <u>HEAD DIAMETER)</u>	<u>4</u>	<u>3</u>
			<u>8D COMMON</u> <u>(2.5 × 0.131 × 0.281</u> <u>HEAD DIAMETER)</u>	<u>6</u>	<u>4</u>
<u>70</u>	<u>24/16</u>	<u>7/16</u>	<u>8D COMMON</u> <u>(2.5 × 0.131 × 0.281</u> <u>HEAD DIAMETER)</u>	<u>4</u>	<u>4</u>
			<u>10D BOX</u> <u>(3 × 0.128 × 0.312</u> <u>HEAD DIAMETER)</u>	<u>6</u>	<u>4</u>
<u>80</u>	<u>24/16</u>	<u>7/16</u>	<u>8D COMMON</u> <u>(2.5 × 0.131 × 0.281</u> <u>HEAD DIAMETER)</u>	<u>4</u>	<u>4</u>
			<u>10D BOX</u> <u>(3 × 0.128 × 0.312</u> <u>HEAD DIAMETER)</u>	<u>6</u>	<u>4</u>
<u>90</u>	<u>32/16</u>	<u>15/32</u>	<u>8D COMMON</u> <u>(2.5 × 0.131 × 0.281</u> <u>HEAD DIAMETER)</u>	<u>4</u>	<u>3</u>
			<u>10D BOX</u> <u>(3 × 0.128 × 0.312</u> <u>HEAD DIAMETER)</u>	<u>6</u>	<u>4</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.5 mm, 1 pound per square foot = 0.0479 kW/m<sup>2</sup>.

a. Fasteners shall comply with Section 1410.6.

b. Maximum spacing of soffit framing members shall not exceed 24 inches.

c. Wood structural panels shall be of an exterior exposure grade.

d. Wood structural panels shall be installed with strength axis perpendicular to supports with a minimum of two continuous spans.

e. Wood structural panels shall be attached to soffit framing members with specific gravity of at least 0.42. Framing members shall be minimum 2 × 3 nominal with the larger dimension in the cross section aligning with the length of fasteners to provide sufficient embedment depths.

f. spacing at intermediate supports is permitted to be 12 inches on center.

**1410.7 Aluminum fascia.**

Aluminum fascia shall have a minimum thickness of 0.019 inches and be installed per the manufacturer's instructions and this code. Fasteners shall be aluminum or stainless steel. Aluminum fascia shall be attached in accordance with Section 1410.7.1, 1410.7.2 or 1410.7.3. The drip edge shall comply with 1507.2.9.3, and the thickness of the drip edge shall be in accordance with Table 1503.2.

**1410.7.1 Fascia installation where the design wind pressure is 30 psf or less.**

Where the design wind pressure is 30 psf (1.44 kPa) or less, aluminum fascia shall be attached as follows:

1. Finish nails shall be provided in the return leg ( $1\frac{1}{4}'' \times 0.057'' \times 0.177''$  head diameter) spaced a maximum of 24 inches (610 mm) on center.
2. The fascia shall be inserted under the drip edge with not less than half the height of the drip edge or 1 inch (25 mm), whichever is greater, of the fascia material covered by the drip edge. One finish nail shall be centered in the face of the fascia from each end of the fascia material section located no more than 1 inch below the drip edge.

**1410.7.2 Fascia installation where the design wind pressure exceeds 30 psf but is 60 psf or less.**

Where the design wind pressure exceeds 30 psf (1.44 kPa) but is 60 psf (2.88 kPa) or less, aluminum fascia shall be attached in accordance with Section 1410.7.2.1 or 1410.7.2.2.

**1410.7.2.1.**

Where the height of the fascia from the top of the roof sheathing to the bottom of the sub-fascia plus any thickness of soffit material below the sub-fascia is less than or equal to 6.5 inches (165 mm) or less, aluminum fascia shall be attached as follows:

1. Finish nails shall be provided in the return leg ( $1\frac{1}{4}'' \times 0.057'' \times 0.177''$  head diameter) spaced a maximum of 24 inches (610 mm) on center.
2. The fascia shall be inserted under the drip edge with not less than half the height of the drip edge or 1 inch (25 mm), whichever is greater, of the fascia material covered by the drip edge. One finish nail shall be centered in the face of the fascia from each end of the fascia material section located no more than 1 inch below the drip edge.

**1410.7.2.2.**

Where the height of the fascia from the top of the roof sheathing to the bottom of the sub-fascia plus any thickness of soffit material below the sub-fascia is greater than 6.5 inches (165 mm), the top edge of the fascia shall be secured using utility trim installed beneath the drip edge with snap locks punched into the fascia spaced no more than 6 inches (152 mm) on center.

**1410.7.3 Fascia installation where the design wind pressure exceeds 60 psf.**

Where the design wind pressure is greater than 60 psf (2.88 kPa), aluminum fascia shall be attached in accordance with Section 1410.7.3.1 or 1410.7.3.2.

**1410.7.3.1.**

Where the height of the fascia from the top of the roof sheathing to the bottom of the sub-fascia plus any thickness of soffit material below the sub-fascia is less than or equal to 4.5 inches (114 mm) or less aluminum fascia shall be attached as follows:

1. Finish nails shall be provided in the return leg ( $1\frac{1}{4}'' \times 0.057'' \times 0.177''$  head diameter) spaced a maximum of 16 inches (406 mm) on center.
2. The fascia shall be inserted under the drip edge with not less than half the height of the drip edge or 1 inch (25 mm), whichever is greater, of the fascia material covered by the drip edge. One finish nail shall be centered in the face of the fascia from each end of the fascia material section located no more than 1 inch below the drip edge.

**1410.7.3.2.**

Where the height of the fascia from the top of the roof sheathing to the bottom of the sub-fascia plus any thickness of soffit material below the sub-fascia is greater than 4.5 inches (114 mm), the top edge of the fascia shall be secured using utility trim installed beneath the drip edge with snap locks punched into the fascia spaced no more than 6 inches (152 mm) on center.

**1410.7.4 Corners on hip roofs.**

Fascia shall be bent around corners and extend at least 12 inches (305 mm) beyond the corner. The next fascia material section shall overlap the extension a minimum of 3 inches (76 mm) and be fastened through the return leg at the overlap.

**1410.7.5 Corners on gable roofs.**

Fascia shall be wrapped (tabbed) around and extend at least 1 inch (25 mm) beyond the corner. The gable fascia material section shall overlap the tab and be fastened through the fascia cover and the tab at the end with two face nails ( $1\frac{1}{4}'' \times 0.057'' \times 0.177''$  head diameter) for a 2 × 4-inch sub-fascia and three face nails for 2 × 6-inch and greater sub fascia.

**REVIEW QUESTION**

- 6. According to section 1410.7.2, where the design wind pressure exceeds \_\_\_\_\_ psf but is \_\_\_\_\_ psf or less, aluminum fascia shall be attached in accordance with section 1410.7.2.1 or 1410.7.2.2.**
  - 20; 40
  - 30; 50
  - 20; 60
  - 30; 60

**CHAPTER 15 – ROOF ASSEMBLIES AND ROOFTOP STRUCTURES**

**Section 1507 Requirements for Roof Coverings**

Section 1507.1 *Underlayment* underwent extensive revisions in the previous code cycle. Some felt these changes resulted in an unnecessary complexity of the section. This revision aims to streamline this section by consolidating various similar application methods into a single description while maintaining the existing installation procedures. Sections 1507.1.1.1 *Underlayment for asphalt, metal, mineral surfaced, slate, and slate-type roof coverings* and 1507.1.1.3 *Underlayment for wood shakes and shingles* were combined into a single section 1507.1.1.1 *Underlayment for asphalt shingles, metal roof panels or shingles, mineral surfaced roll roofing, slate and slate-type roof shingles, wood shakes and wood shingles* in the 8<sup>th</sup> Edition of the Florida Building Code. TABLE 1507.1.1.1 *Underlayment with self-adhering strips over roof decking joint* was also updated.

A few changes regarding the requirements were also included in this section. The first is a modification to the deck joint table width complying with ASTM D1970, it revises the minimum width requirement to 3 -inch-wide strip of self-adhering polymer-modified bitumen membrane complying with ASTM D1970 or self-adhering flexible flashing tape complying with AAMA 711. Another change is related to the amount of overlap when installing underlayment. When applying the third course of underlayment it should overlap the second course by half the width of the sheet plus 2 inches, all additional layers should overlap by the width of the sheet plus 1 inch. This modification emphasizes the common underlayment requirements for most steep slope roof coverings while clarifying the minor distinctions.

You can read the full 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, D6757 and D8257 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 or 1507.1.1.2, 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 shingles, metal roof panels or shingles, mineral surfaced roll roofing, slate and slate-type roof shingles, wood shakes and wood shingles.

Underlayment for asphalt shingles, metal roof panels or shingles, mineral surfaced roll roofing, slate and slate-type shingles, wood shakes and wood shingles 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.

#### Exceptions:

1. This method is not permitted for wood shingles or shakes.
2. An existing self-adhering modified bitumen underlayment that has been previously installed over the roof decking and, where it is required, renailed 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 3 <sup>3</sup>/<sub>4</sub>-inch-wide (95 mm) strip of self-adhering polymer-modified bitumen membrane complying with ASTM D1970 or self-adhering 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 membrane strips.

3. Two layers of ASTM D226 Type II or ASTM D4869 Type III, Type IV or ASTM D8257 underlayment shall be installed as follows: Apply a strip of underlayment for the first course 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 a full sheet of underlayment for the second course. Apply the third course of underlayment overlapping the second course half the width of a full sheet plus 2 inches (51 mm). Overlap all successive courses half the width of a full sheet plus 1 inch (25 mm). End laps shall be 6 inches (152 mm) and shall be offset by 6 feet (1829 mm). 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. 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, Vult, equals or exceeds 170 mph. Metal caps shall have a thickness of not less than 32-gage sheet metal. 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 <sup>3</sup>/<sub>4</sub> inch (19.05 mm) into the roof sheathing.

#### Exception:

1. Use of ASTM D8257 underlayment is not permitted for wood shingles or shakes.

**TABLE 1507.1.1.1**

**UNDERLAYMENT WITH SELF-ADHERING STRIPS OVER ROOF DECKING JOINTS**

ROOF COVERING	UNDERLAYMENT TYPE	UNDERLAYMENT ATTACHMENT	
		ROOF SLOPE 2:12 AND LESS THAN 4:12	ROOF SLOPE 4:12 AND GREATER
Asphalt Shingles, Metal Roof Panels, Photovoltaic Shingles	ASTM D226 Type II ASTM D4869 Type III or IV ASTM D6757 ASTM D8257	Apply in accordance with Section 1507.1.1.1, Item 3.	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. Underlayment shall be attached to a nailable deck with corrosion-resistant fasteners with a maximum fastener spacing measured horizontally and vertically of 12 inches o.c. between side laps 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. The cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than $\frac{3}{4}$ inch into the roof sheathing.
Metal Roof Shingles, Mineral-Surface Roll Roofing, Slate and Slate-type Shingles	ASTM D226 Type II ASTM D4869 Type III or IV ASTM D8257		
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.

**REVIEW QUESTION**

7. According to section 1507.1.1.1, use of ASTM \_\_\_\_\_ is not permitted for wood shingles or shakes.
- D226
  - D4869 Type III
  - D4869 Type IV
  - D8257

## CHAPTER 16 – STRUCTURAL DESIGN

### Section 1611.1 Design Rain Loads

Section 1611.1 *Design Rain Loads* was updated to align with the 2022 edition of ASCE 7 (ACSE 7-22) updates. The main revision incorporates the ponding head ( $d_p$ ) direction into the rain load calculation. A ponding analysis was mandated in ASCE 7-16 and earlier versions, but there was minimal guidance on the proper procedure for conducting this analysis. Including the ponding head in the rain load calculation offers a more uniform method to accommodate ponding.



In ASCE 7-22, the incorporation of risk categories influences the calculation of rainfall intensity. Consequently, this modification necessitates that the design storm return period for determining the hydraulic head is based on risk category.

Figure 16.11.1 *100-Year 1-Hour Rainfall Western United States* was removed from the 8<sup>th</sup> Edition of the Florida Building Code as it is outdated. This figure is a 100-year hourly rainfall map that no longer provides the rainfall intensity information needed for a 15-minute storm. Rainfall is now determined by risk category. ASCE 7-22 doesn't include rainfall data or maps for determining the rainfall rate. The National Oceanic and Atmospheric Administration (NOAA) can provide information on rainfall data.

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

### SECTION 1611.1 DESIGN RAIN LOADS

Each portion of a roof shall be designed to sustain the load of rainwater as per the requirements of Chapter 8 of ASCE 7. Rain loads shall be based on the summation of the static head,  $d_s$ , hydraulic head,  $d_h$ , and ponding head,  $d_p$ , using Equation 16-19. The hydraulic head shall be based on hydraulic test data or hydraulic calculations assuming a flow rate corresponding to a rainfall intensity equal to or greater than the 15-minute duration storm with return period given in Table 1611.1. The ponding head shall be based on structural analysis as the depth of water due to deflections of the roof subjected to unfactored rain load and unfactored dead load.

$$R = 5.2(d_s + d_h + d_p)$$

(Equation 16-19)

For SI:  $R = 0.0098(d_s + d_h + d_p)$

where:

$d_h$  = Hydraulic head equal to the depth of water on the undeflected roof above the inlet of the secondary drainage system for structural loading (SDSL) required to achieve the design flow in inches (mm).

$d_p$  = Ponding head equal to the depth of water due to deflections of the roof subjected to unfactored rain load and unfactored dead load in inches (mm).

$d_h$  = Static head equal to the depth of water on the undeflected roof up to the inlet of the secondary drainage system for structural loading (SDSL) in inches (mm).

$R$  = Rain load in psf (kN/m<sup>2</sup>).

SDSL is the roof draining system through which water is drained from the roof when the drainage systems listed in ASCE 7, Section 8.2(a) through (d) are blocked or not working.

**TABLE 1611.1**

**DESIGN STORM RETURN PERIOD BY RISK CATEGORY**

<u>RISK CATEGORY</u>	<u>DESIGN STORM RETURN PERIOD</u>
<u>I &amp; II</u>	<u>100 years</u>
<u>III</u>	<u>200 years</u>
<u>IV</u>	<u>500 years</u>

### REVIEW QUESTION

8. In Table 1611.1, which risk category has a design storm return period of 500 years?
- I
  - II
  - III
  - IV

## CHAPTER 33 – SAFEGUARDS DURING CONSTRUCTION

### Section 3307.2 Excavation Retention Systems

In 2023, Section 3307.2 *Excavation Retention Systems* was added to Chapter 33 – Safeguards During Construction of the 8<sup>th</sup> Edition of the Florida Building Code. In the 7<sup>th</sup> Edition of the Florida Building Code Section 3307, Protection of Adjoining Property, it was proposed that underpinnings were presented as the major means to protecting adjacent properties but that excavation retaining systems are more commonly used.

An effective excavation retention system is essential for certain new buildings with basements and relatively shallow excavations when neighboring structures are nearby. This proposal led to the additional Section 3307.2 *Excavation Retention System*.

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

#### **3307.2 Excavation retention systems.**

Where a retention system is used to provide support of an excavation for protection of adjacent structures, the system shall conform to the requirements in Section 3307.2.1 through 3307.2.3.

##### **3307.2.1 Excavation retention system design.**

Excavation retention systems shall be designed by a registered design professional to provide vertical and lateral support.

##### **3307.2.2 Excavation retention system monitoring.**

The retention system design shall include requirements for monitoring of the system and adjacent structures for horizontal and vertical movement.

### **3307.2.3 Retention system removal.**

Elements of the system shall only be removed or decommissioned when adequate replacement support is provided by backfill or by the new structure. Removal or decommissioning shall be performed in such a manner that protects the adjacent property.

## **REVIEW QUESTION**

9. **True or False: According to section 3307.2.1, excavation retention systems shall be designed by a registered design professional to provide vertical and horizontal support.**
- True
  - False

## **CHAPTER 1 – SCOPE AND ADMINISTRATION**

### **Section 110.9 Mandatory Structural Inspections for Condominiums and Cooperative Buildings**

We will conclude this course by presenting a change to the 7<sup>th</sup> Edition code that went into effect in 2022. This was included in the 2022 Supplement to the 7<sup>th</sup> Edition Florida Building Code – Supplement 2 but is also currently part of the 8<sup>th</sup> Edition Florida Building Code.



In June of 2021, a residential condominium partially collapsed overnight; many were killed, and more were left homeless. Florida appointed a task force to make recommendations to help prevent future incidents. This led to Florida’s Senate Bill 4-D, passed on May 27, 2022. The building safety inspection component of the bill required that all condominiums and cooperative buildings in Florida that are three stories or taller must undergo milestone inspections and structural assessments and submit designated information to the Florida Department of Business and Professional Regulation.

Details regarding building safety inspections, the bill:

- Requires condominium and cooperative association buildings that are three or more stories in height to have a “milestone inspection” of the buildings’ structural integrity by an architect or engineer when a building reaches:
  - 30 years of age and every 10 years thereafter, or
  - 25 years of age and every 10 years thereafter if the building is located within three miles of a coastline.

- Requires, if a milestone inspection is required and the building’s certificate of occupancy was issued on or before July 1, 1992, the building’s initial milestone inspection to be performed before December 31, 2024.
- Requires that a phase one milestone inspection must commence within 180 days after an association receives a written notice from the local enforcement agency.
- Requires a phase two milestone inspection if there is evidence of “substantial structural deterioration” as determined by a phase one inspection.
- Specifies the minimum contents of a milestone inspection report.
- Requires inspection report results to be provided to local building officials and the associations, and requires an inspector-prepared summary to be provided to unit owners by mail and by email to unit owners who have consented to receive notices by email.
- Requires that the contract between an association that is subject to the milestone inspection requirement and a community association manager (CAM) or CAM firm must require compliance with those requirements as directed by the board.
- Requires the local enforcement agency to review and determine if a building is safe for human occupancy if an association fails to submit proof that repairs for substantial deterioration have been scheduled or begun within at least 365 days after the local enforcement agency receives a phase two inspection report.
- Requires the Florida Building Commission to make recommendations to the Governor and Legislature regarding the inspection requirements in the bill and inspection for other types of buildings and structures that are three stories or more.
- Provides that a willful and knowing failure by an officer or director of an association to have a milestone inspection performed is a breach of the officer’s and director’s fiduciary relationship to the unit owners.
- Gives unit owners the right to inspect and copy, as official records, the milestone inspection report and all other inspection reports relating to structural or life safety and gives renters the right to inspect the milestone inspection reports.
- Requires the developer’s turnover inspection report to comply with the milestone inspection requirements.
- Requires associations to report to the Florida Division of Condominiums, Timeshare, and Mobile Homes (division) the number of buildings that are three stories or higher in height and the total number of units in such buildings on or before January 1, 2023, and requires the division to publish that information on its website.
- Requires developer and non-developer unit owners to give prospective buyers of a unit a copy of the inspector-prepared summary of the milestone inspection report.
- Extends the jurisdiction of the division to investigate complaints to include complaints related to the procedural completion of milestone inspections.

Details regarding the funding of reserves for the continued maintenance and repair of condominium and cooperative buildings, the bill:

- Requires condominium associations and cooperative associations to complete a structural integrity reserve study every 10 years for each building in an association that is three stories or higher in height.

- Requires associations existing on or before July 1, 2022, that are controlled by non-developer unit owners to have a structural integrity reserve study completed by December 31, 2024.
- Defines “structural integrity reserve study” as a study of the reserve funds required for future major repairs and replacement of the common elements based on a visual inspection of the common elements.
- Requires the study to include a visual inspection, state the estimated remaining useful life, and the estimated replacement cost of the roof, load bearing walls or other primary structural members, floor, foundation, fireproofing and fire protection systems, plumbing, and any item with a deferred maintenance or replacement cost that exceeds \$10,000.
- Requires the visual inspection to be performed by a person licensed as an engineer or an architect. However, any qualified person or entity may perform the other components of a structural integrity reserve study.
- Requires a developer to have a structural integrity reserve study completed for each building in the association that is three stories or more in height before turning over control of an association to the non-developer unit owners.
- Provides that it is a breach of a board member or officer’s fiduciary duty if an association fails to complete a structural integrity reserve study.

Section 110.9 *Mandatory structural inspections for condominium and cooperative buildings*, was added to Chapter 1 Scope and Administration, under Section 110 Inspections with code language consistent with the 4-D bill.

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

**110.9 Mandatory structural inspections for condominium and cooperative buildings.**

**110.9.1 General.** The Legislature finds that maintaining the structural integrity of a building throughout its service life is of paramount importance in order to ensure that buildings are structurally sound so as to not pose a threat to the public health, safety, or welfare. As such, the Legislature finds that the imposition of a statewide structural inspection program for aging condominium and cooperative buildings in this state is necessary to ensure that such buildings are safe for continued use.

**110.9.2. As used in this section, the terms:**

(a) “Milestone inspection” means a structural inspection of a building, including an inspection of load-bearing walls and the primary structural members and primary structural systems as those terms are defined in s. 627.706, Florida Statutes, by a licensed architect or engineer authorized to practice in this state for the purposes of attesting to the life safety and adequacy of the structural components of the building and, to the extent reasonably possible, determining the general structural condition of the building as it affects the safety of such building, including a determination of any necessary maintenance, repair, or replacement of any structural component of the building. The purpose of such inspection is not to determine if the condition of an existing building is in compliance with the Florida Building Code or the firesafety code.

(b) “Substantial structural deterioration” means substantial structural distress that negatively affects a building’s general structural condition and integrity. The term does not include surface imperfections such as cracks, distortion, sagging, deflections, misalignment, signs of leakage, or peeling of

finishes unless the licensed engineer or architect performing the phase one or phase two inspection determines that such surface imperfections are a sign of substantial structural deterioration.

**110.9.3.** A condominium association under chapter 718, Florida Statutes, and a cooperative association under chapter 719, Florida Statutes, must have a milestone inspection performed for each building that is three stories or more in height by December 31 of the year in which the building reaches 30 years of age, based on the date the certificate of occupancy for the building was issued, and every 10 years thereafter. If the building is located within 3 miles of a coastline as defined in s. 376.031, Florida Statutes, the condominium association or cooperative association must have a milestone inspection performed by December 31 of the year in which the building reaches 25 years of age, based on the date the certificate of occupancy for the building was issued, and every 10 years thereafter. The condominium association or cooperative association must arrange for the milestone inspection to be performed and is responsible for ensuring compliance with the requirements of this section. The condominium association or cooperative association is responsible for all costs associated with the inspection. This subsection does not apply to a single-family, two-family, or three-family dwelling with three or fewer habitable stories above ground.

**110.9.4.** If a milestone inspection is required under this section and the building’s certificate of occupancy was issued on or before July 1, 1992, the building’s initial milestone inspection must be performed before December 31, 2024. If the date of issuance for the certificate of occupancy is not available, the date of issuance of the building’s certificate of occupancy shall be the date of occupancy evidenced in any record of the local building official.

**110.9.5.** Upon determining that a building must have a milestone inspection, the local enforcement agency must provide written notice of such required inspection to the condominium association or cooperative association by certified mail, return receipt requested.

**110.9.6.** Within 180 days after receiving the written notice under Section 110.9.5, the condominium association or cooperative association must complete phase one of the milestone inspection. For purposes of this section, completion of phase one of the milestone inspection means the licensed engineer or architect who performed the phase one inspection submitted the inspection report by e-mail, United States Postal Service, or commercial delivery service to the local enforcement agency.

**110.9.7.** A milestone inspection consists of two phases:

**110.9.7.1.** For phase one of the milestone inspection, a licensed architect or engineer authorized to practice in this state shall perform a visual examination of habitable and nonhabitable areas of a building, including the major structural components of a building, and provide a qualitative assessment of the structural conditions of the building. If the architect or engineer finds no signs of substantial structural deterioration to any building components under visual examination, phase two of the inspection, as provided in Section 110.9.7.2, is not required. An architect or engineer who completes a phase one milestone inspection shall prepare and submit an inspection report pursuant to Section 110.9.8.

**110.9.7.2.** A phase two of the milestone inspection must be performed if any substantial structural deterioration is identified during phase one. A phase two inspection may involve destructive or nondestructive testing at the inspector’s direction. The inspection may be as extensive or as limited as necessary to fully assess areas of structural distress in order to confirm that the building is structurally sound and safe

for its intended use and to recommend a program for fully assessing and repairing distressed and damaged portions of the building. When determining testing locations, the inspector must give preference to locations that are the least disruptive and most easily repairable while still being representative of the structure. An inspector who completes a phase two milestone inspection shall prepare and submit an inspection report pursuant to Section 110.9.8.

**110.9.8.** Upon completion of a phase one or phase two milestone inspection, the architect or engineer who performed the inspection must submit a sealed copy of the inspection report with a separate summary of, at minimum, the material findings and recommendations in the inspection report to the condominium association or cooperative association, and to the building official of the local government which has jurisdiction. The inspection report must, at a minimum, meet all of the following criteria:

- (a) Bear the seal and signature, or the electronic signature, of the licensed engineer or architect who performed the inspection.
- (b) Indicate the manner and type of inspection forming the basis for the inspection report.
- (c) Identify any substantial structural deterioration, within a reasonable professional probability based on the scope of the inspection, describe the extent of such deterioration, and identify any recommended repairs for such deterioration.
- (d) State whether unsafe or dangerous conditions, as those terms are defined in the Florida Building Code, were observed.
- (e) Recommend any remedial or preventive repair for any items that are damaged but are not substantial structural deterioration.
- (f) Identify and describe any items requiring further inspection.

**110.9.9.** The association must distribute a copy of the inspector-prepared summary of the inspection report to each condominium unit owner or cooperative unit owner, regardless of the findings or recommendations in the report, by United States mail or personal delivery and by electronic transmission to unit owners who previously consented to received notice by electronic transmission; must post a copy of the inspector-prepared summary in a conspicuous place on the condominium or cooperative property; and must publish the full report and inspector-prepared summary on the association's website, if the association is required to have a website.

**110.9.10.** A local enforcement agency may prescribe timelines and penalties with respect to compliance with this section.

**110.9.11.** A board of county commissioners may adopt an ordinance requiring that a condominium or cooperative association schedule or commence repairs for substantial structural deterioration within a specified timeframe after the local enforcement agency receives a phase two inspection report; however, such repairs must be commenced within 365 days after receiving such report. If an association fails to submit proof to the local enforcement agency that repairs have been scheduled or have commenced for substantial structural deterioration identified in a phase two inspection report within the required timeframe, the local enforcement agency must review and determine if the building is unsafe for human occupancy.

## REVIEW QUESTION

10. According to section 110.9.7, how many phases does a milestone inspection consist of?
- a. one
  - b. two
  - c. three
  - d. four

## CONCLUSION

This concludes the course *Florida Building Code 8<sup>th</sup> Edition: Advanced Course*. Please keep in mind that this course does not cover all of the changes from the 7<sup>th</sup> Edition of the Florida Building Code to the 8<sup>th</sup> 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 2023 Update, including tracking charts. The 8<sup>th</sup> Edition of the Building Code is slated to go into effect on 12/31/2023. 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. According to Section 809.2, alternatively, the artificial decorative vegetation shall be tested in accordance with the NFPA 289, using the \_\_\_\_\_ ignition source, and shall have a maximum heat release rate of 100 kW.
- 15 kW
  - 20 kW**
  - 25 kW
  - 30 kW

*Explanation: Section 809.2, Testing, states that artificial decorative vegetation shall meet the flame propagation performance criteria of the Test Method 1 or Test Method 2, as appropriate, of NFPA 701. Meeting such criteria shall be documented and certified by the manufacturer in an approved manner. Alternatively, the artificial decorative vegetation shall be tested in accordance with NFPA 289, using the 20kW ignition source, and shall have a minimum heat release rate of 100 kW.*

2. True or False: Doors in means of egress shall be readily distinguishable from the adjacent construction and finishes such that the doors are easily recognizable as doors.
- True**
  - False

*Explanation: Section 1010.1 states that doors in the means of egress shall be readily distinguishable from the adjacent construction and finishes such that the doors are easily recognizable. 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.*

3. According to Section 1010.1.3, the forces to unlatch doors shall comply with which of the following:
- Where door hardware operates by push or pull, the operational force to unlatch the door shall not exceed 15 pounds (66.7N).
  - Where door hardware operates by rotation, the operational force to unlatch the door shall not exceed 28 inch-pounds (315 N-cm).
  - Both a and b.**
  - None of the above.

*Explanation: Section 1010.1.3 states that the forces to unlatch doors shall comply with the following: 1) Where hardware operates by push or pull, the operational force to unlatch the door shall not exceed 15 pounds (66.7N). 2) Where door hardware operates by rotation, the operational force to unlatch the door shall not exceed 28 inch-pounds (315 N-cm).*

4. True or False: According to section 1010.2.1, the unlatching of any door or leaf shall not require more than one operation. Manual bolts are not permitted. (With some exceptions).
- True**
  - False

*Explanation: Section 1010.2.1, Unlatching, states that the unlatching of any door or leaf shall not require more than one operation. Manual bolts are not permitted. Exceptions are: places of detention or restraint; Doors with manual bolts, automatic flush bolts, and constant latching bolts as permitted by Section 1010.2.4, Item 4; and doors from individual dwelling units and sleeping units of Group R occupancies as permitted by Section 1010.2.4, Item 5.*

5. According to 1405.14, Vinyl siding shall be permitted on \_\_\_\_\_ walls where the design wind pressure does not exceed 30 pounds per square foot.
- interior walls
  - exterior walls**
  - vertical walls
  - any walls

*Explanation: Section 1405.14, vinyl siding, states that vinyl siding conforming to the requirements of this section and complying with ASTM D3679 shall be permitted on exterior walls where the design wind pressure determined in accordance with Section 1609 does not exceed 30 pounds per square foot (1.44 kN/m<sup>2</sup>).*

6. According to section 1410.7.2, where the design wind pressure exceeds \_\_\_\_\_ psf but is \_\_\_\_\_ psf or less, aluminum fascia shall be attached in accordance with section 1410.7.2.1 or 1410.7.2.2.
- 20; 40
  - 30; 50
  - 20; 60
  - 30; 60**

*Explanation: In section 1410.7.2, where the design wind pressure exceeds 30psf (1.33kPa) but is 60 psf (2.88 kPa) or less, aluminum fascial shall be attached in accordance with Section 1401.7.2.1 or 1410.7.2.2.*

7. According to section 1507.1.1.1, use of ASTM \_\_\_\_\_ is not permitted for wood shingles or shakes
- D226
  - D4869 Type III
  - D4869 Type IV
  - D8257**

*Explanation: In section 1507.1.1.1, it states that the use of ASTM D8257 underlayment is not permitted for wood shingles or shakes.*

8. In Table 1611.1, which risk category has a design storm return period of 500 years?
- I
  - II
  - III
  - IV**

*Explanation: According to table 1611.1, for Risk Category IV, the design storm return period is 500 years.*

9. True or False: According to section 3307.2.1, excavation retention systems shall be designed by a registered design professional to provide vertical and horizontal support.
- True
  - False**

*Explanation: Excavation retention systems shall be designed by a registered design professional to provide vertical and lateral support.*

10. According to section 110.9.7, how many phases does a milestone inspection consist of?
- one
  - two**
  - three
  - four

*Explanation: According to section 110.9.7, a milestone inspection consists of two phases. These two phases are outlined in 110.9.7.1 and 110.9.7.2.*



