

# 8th Edition (2023) Florida Building Code

**Proposed Code Modifications**

## **ROOFING DETAIL**



**This document created by the Florida Department of Business and Professional Regulation -**

**850-487-1824**

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R9954**

1

Date Submitted	01/25/2022	Section	202	Proponent	Michael Silvers (FRSA)
Chapter	2	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments Yes**

**Alternate Language No**

### Related Modifications

Building Chapter 15 Section 1502 Definitions Residential Chapter 2 Definitions

### Summary of Modification

Changes "Roof Covering System" to Roof System which is used throughout roofing sections. After "Roof Covering System" user is directed to "Roof Assembly". A Roof Assembly includes the deck where a "Roof Covering System" does not. Also clarifies definition of "Roof Assembly".

### Rationale

Changes the term "Roof Covering System" which is not regularly referred to in the code to "Roof System" which is used consistently throughout roofing sections of the code. Current direction after "Roof Covering System" states to see "Roof Assembly" which is not accurate. A Roof Assembly includes the deck where a Roof System does not. Also clarifies definition of "Roof Assembly".

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**



Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

## 1st Comment Period History

S9954-G1	Proponent	Sam Francis	Submitted	4/9/2022 11:02:02 AM	Attachments	No
	Comment: The American Wood Council submits the following comment: This proposal seems to be the same as proposal S9955, thus the same comment would apply: This change adds confusion rather than providing clarification. "Roof System" is not used in the roof assembly definition but appears to be part of the roof assembly.					

*Previous definitions remain unchanged. Some unchanged definitions below are shown for clarity.*

**ROOF ASSEMBLY.** ~~(For application to Chapter 15 only).~~ A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly includes the roof covering roof deck, and may include a vapor retarder, substrate or thermal barrier, insulation or similar substrate ~~vapor retarder and roof covering..~~

**ROOF COVERING.** The covering applied to the roof deck for weather resistance, fire classification or appearance.

**ROOF COVERING SYSTEM.** See “Roof assembly.”

**ROOF DECK.** The flat or sloped surface not including its supporting members or vertical supports.

**ROOF RECOVER.** The process of installing an additional roof covering over a prepared existing roof covering without removing the existing roof covering.

**ROOF REPAIR.** Reconstruction or renewal of any part of an existing roof for the purposes of its maintenance.

**ROOF REPLACEMENT.** The process of removing the existing roof covering, repairing any damaged substrate and installing a new roof covering.

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

**ROOF SYSTEM.** A roof system consists of a roof covering and other interacting roofing components and may include vapor retarder, thermal barrier, insulation or other similar substrate. The system does not include the roof deck unless it is part of a single component serving as the roof covering and the roof deck.

*Remaining definitions remain unchanged*

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R9882

2

Date Submitted	01/10/2022	Section	1507.1.1	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments Yes

Alternate Language No

### Related Modifications

9884

### Summary of Modification

Modify deck joint tape width for D1970 materials.

### Rationale

There is no technical basis to require a different deck joint tape width for tapes complying with AAMA 711 versus tapes that comply with ASTM D1970. This modification revises the minimum width requirement for ASTM D1970 tapes to 3 ¾ inches to match the requirement for those that comply via AAMA 711. Also, it removes ambiguity caused by references to both 3 ¾-inch and 4-inch wide tape within the same paragraph.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement.

#### Impact to building and property owners relative to cost of compliance with code

Cost of compliance should not change.

#### Impact to industry relative to the cost of compliance with code

Cost of compliance should not change.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Removes ambiguity about deck joint tape requirements.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Removes ambiguity about deck joint tape requirements.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Corrects an existing discriminating code provision to create equivalent requirements for materials performing the same function.

**Does not degrade the effectiveness of the code**

Does not degrade the effectiveness of the code.

## 1st Comment Period History

R9882-G1	Proponent	Ken Hix	Submitted	4/14/2022 2:33:12 PM	Attachments	No
	Comment: 3-3/4 (96mm) wide tape is referred to in this proposal. 3.75 inches is actually 95.25 mm so we believe this just to be a rounding error created by the various conversion programs available online. There are multiple tapes on the market labelled 3-3/4 inches (95mm) so this could create a problem for commonly used tapes. An editorial revision to 3-3/4 inch (95mm) wide tape will resolve this concern.					



**Revise as shown:****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 3 3/4-inch-wide (96 mm) ~~4-inch-wide (102 mm)~~ strip of self-adhering 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 3 3/4-inch-wide (96 mm) ~~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 3 3/4-inch-wide (96 mm) ~~4-inch-wide (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 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 3 3/4-inch-wide (96 mm) ~~4-inch-wide (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 3 3/4-inch-wide (96 mm) ~~4-inch-wide (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.

[REMAINDER OF SECTION 1507.1.1.1 UNCHANGED]

**Revise as shown:**

**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 3 3/4-inch-wide (96 mm) ~~4-inch-wide (102 mm)~~ strip of self-adhering 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 3 3/4-inch-wide (96 mm) ~~4-inch-wide (102 mm)~~ membrane strips.

2. A minimum 3 3/4-inch-wide (96 mm) strip of 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 underlayment complying with Table 1507.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 3 3/4-inch-wide (96 mm) ~~4-inch-wide (102 mm)~~ flashing strips.

[REMAINDER OF SECTION 1507.1.1.3 UNCHANGED]

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## **Sub Code: Building**

**R9885**

3

Date Submitted	01/10/2022	Section	1507.2.9	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### **Related Modifications**

9887

### **Summary of Modification**

Remove provision for printed instructions.

### **Rationale**

Manufacturer instructions are increasingly made available in media other than “printed” versions. This proposal removes the word “printed” from the only two instances in the FBC-Building Chapter 15 where it is used in conjunction with “instructions.” Removal of the word “printed” will permit alternative methods for providing instructions, including digital formats that support greater sustainability. The proposed changes also are important in light of events such as the COVID-19 pandemic, which brought attention to the need to be able to deliver information using alternative methods.

### **Fiscal Impact Statement**

#### **Impact to local entity relative to enforcement of code**

No impact to local entity enforcement.

#### **Impact to building and property owners relative to cost of compliance with code**

Cost of compliance should not change.

#### **Impact to industry relative to the cost of compliance with code**

Cost of compliance should not change.

#### **Impact to small business relative to the cost of compliance with code**

### **Requirements**

#### **Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Provides opportunity for more efficient use of limited resources by permitting alternative means to provide manufacturer instructions.

#### **Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Clears the way for improved and more efficient means to deliver manufacturer instructions.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

The only roof covering type with code provisions requiring "printed" instructions is asphalt shingles.

This proposal removes that material specific requirement.

**Does not degrade the effectiveness of the code**

Does not degrade the effectiveness of the code.



**Revise as shown:**

**1507.2.7 Attachment.** Asphalt shingles shall have the minimum number of fasteners required by the manufacturer and Section 1504.1. Asphalt shingles shall be secured to the roof with not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 21 units vertical in 12 units horizontal (21:12), asphalt shingles shall be installed in accordance with the manufacturer's ~~printed~~ installation instructions for steep-slope roof applications.

**Revise as shown:**

**1507.2.9 Flashings.** Flashing for asphalt shingles shall comply with this section or RAS 111. Flashing shall be applied in accordance with this section, the asphalt shingle manufacturer's ~~printed~~ instructions or RAS 111.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R9888

4

Date Submitted	01/11/2022	Section	1507	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Remove redundant reference for self-adhering polymer modified bitumen sheets to comply with D1970.

### Rationale

The statement in 1507.2.4 is redundant and is proposed for removal. All references to self-adhered polymer modified bitumen sheet within FBC-Building Chapter 15 indicate these materials must comply with ASTM D1970. This occurs in Section 1507.1.1.1 which provides underlayment options for asphalt, metal, mineral surfaced, slate and slate-type roof coverings. It occurs in 1507.1.1.3 for wood shake and wood shingle underlayment. And self-adhering polymer modified bitumen sheets used in closed valleys with asphalt shingles are required to comply with ASTM D1970 per Section 1507.2.9.2. The statement in 1507.2.4 is not necessary.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

Cost of compliance will not change. This MOD cleans up code language.

#### Impact to industry relative to the cost of compliance with code

Cost of compliance will not change. This MOD cleans up code language.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Removes unnecessary section to streamline and simplify code.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Removes unnecessary section to streamline and simplify code.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate. Removes redundant code section.

**Does not degrade the effectiveness of the code**

Removes unnecessary section to streamline and simplify code.

**1507.2.4 RESERVED. ~~Self-adhering polymer modified bitumen sheet.~~** Self-adhering polymer modified bitumen sheet shall comply with ASTM D1970.



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R9889**

5

Date Submitted	01/11/2022	Section	1504	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

R9512

### Summary of Modification

Remove FM 4470 section reference to prevent future correlation issues.

### Rationale

This modification removes the reference to a specific section of standard FM 4470 to eliminate future correlation issues should the referenced standard section number change. This issue was considered in the first phase as R9512 (ICC S18-19). It was identified as an overlap and was placed on the consent agenda for denial.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

This is a cleanup and has no impact on cost of compliance.

#### Impact to industry relative to the cost of compliance with code

This is a cleanup and has no impact on cost of compliance.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Makes the code more robust.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Removal of reference to a section of a referenced standard eliminates future correlation issues.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

**Does not degrade the effectiveness of the code**  
Does not degrade effectiveness of the code.

**Revise as shown:**

**1504.7 Impact resistance.** Roof coverings installed on low-slope roofs (roof slope < 2:12) in accordance with Section 1507 shall resist impact damage based on the results of tests conducted in accordance with ASTM D3746, ASTM D4272 or the “Resistance to Foot Traffic Test” in Section 4.6 of FM 4470. All structural metal roofing systems having a thickness equal to or greater than 22 gage and all nonstructural metal roof systems having a thickness equal to or greater than 26 gage shall be exempt from the tests listed above.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R9893

6

Date Submitted	01/12/2022	Section	1505	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments Yes**

**Alternate Language No**

**Related Modifications**

### Summary of Modification

Clarify fire classification provisions.

### Rationale

This MOD clarifies the fire classification provisions of Section 1505. The initial sentence of Section 1505.1 is modified to clarify that Section 1505 establishes fire classification requirements of roof assemblies instead of a requirement to divide roof assemblies into classes. A new sentence is introduced as a replacement for the final sentence. It clarifies that Table 1505.1 provides the minimum fire classification for roof assemblies based on type of construction, rather than the "minimum roof covering," which is a vague and potentially confusing phrase. Rearrangement of the section makes it read more logically and improves clarity. The title of Table 1505.1 and footnote b are revised to align with the other changes.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement.

#### Impact to building and property owners relative to cost of compliance with code

Changes are to improve clarity and should not affect cost of compliance.

#### Impact to industry relative to the cost of compliance with code

Changes are to improve clarity and should not affect cost of compliance.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

As a life safety issue, clear understanding of roofing fire classification provisions is important.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves understanding of fire classification provisions for roofing.



**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Improves understanding of fire classification provisions for roofing.

## 1st Comment Period History

29893-G1	Proponent	Sam Francis	Submitted	4/9/2022 10:46:56 AM	Attachments	No
	Comment: The American Wood Council submits the following comment: This change adds confusion rather than providing clarification. "Roof System" is not used in the roof assembly definition but appears to be part of the roof assembly.					

Revise as shown:

**[BF] 1505.1 General.** Fire classification of *roof assemblies* shall be in accordance with Section 1505. ~~Roof assemblies shall be divided into the classes defined below.~~ The minimum fire classification of *roof assemblies* installed on buildings shall comply with Table 1505.1 based on type of construction of the building. Class A, B and C roof assemblies and roof coverings required to be listed by this section shall be tested in accordance with ASTM E108 or UL 790. In addition, *fire-retardant-treated wood* roof coverings shall be tested in accordance with ASTM D2898. ~~The minimum roof coverings installed on buildings shall comply with Table 1505.1 based on the type of construction of the building.~~

**Exception:** Skylights and sloped glazing that comply with Chapter 24 or Section 2610.

TABLE 1505.1<sup>a, b</sup>

**MINIMUM ROOF ASSEMBLY ~~COVERING~~ CLASSIFICATION**  
**FOR TYPES OF CONSTRUCTION**

IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
B	B	B	C <sup>c</sup>	B	C <sup>c</sup>	B	B	C <sup>c</sup>

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m<sup>2</sup>.

a. Unless otherwise required in accordance with the *International Wildland-Urban Interface Code* or due to the location of the building within a fire district in accordance with Appendix D.

b. Nonclassified *roof assemblies* ~~roof coverings~~ shall be permitted on buildings of Group U occupancies, where there is a minimum fire-separation distance of 6 feet measured from the leading edge of the roof.

c. Buildings that are not more than two stories above grade plane and having not more than 6,000 square feet of projected roof area and where there is a minimum 10-foot fire-separation distance from the leading edge of the roof to a lot line on all sides of the building, except for street fronts or public ways, shall be permitted to have roofs of No. 1 cedar or redwood shakes and No. 1 shingles constructed in accordance with Section 1505.7.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R9896

7

Date Submitted	01/12/2022	Section	1507	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	No	Attachments	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language Yes

### Related Modifications

### Summary of Modification

Clarify asphalt shingle wind resistance classification.

### Rationale

This MOD clarifies the wind resistance requirements of asphalt shingles by indicating: (1) the reference standards are for testing as well as classification, (2) Table 1507.2.7.1 provides the classification required for the applicable wind speed, and (3) Chapter 16 wind speed maps for the appropriate risk category are used to determine applicable wind speed. The sentence description of the classifications—which includes an incorrectly stated limitation of D7158 Glass G to Vasd of 100 mph—is removed as a simplification and to make future maintenance easier. A pointer to Section 1609.3.1 is added to the column title for Vasd in Table 1507.2.7.1 (a similar reference is already present in the FBC–Residential, Table R905.2.6.1) so the user knows where to find the conversions from the Vult wind speeds in the Chapter 16 wind speed maps. Finally, the proposal removes redundant language from section 1507.2.5 and the reference to standard ASTM D225, which was withdrawn in 2012.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of the code.

#### Impact to building and property owners relative to cost of compliance with code

No affect on cost of compliance. Clarifies existing provisions.

#### Impact to industry relative to the cost of compliance with code

No affect on cost of compliance. Clarifies existing provisions.

#### Impact to small business relative to the cost of compliance with code

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Provides a more accurate expression of existing code provisions.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

The code is strengthened by a more accurate expression of existing code provisions.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

The code is strengthened by a more accurate expression of existing code provisions.

## Alternate Language

### 1st Comment Period History

39896-A1	<b>Proponent</b>	Aaron Phillips	<b>Submitted</b>	4/15/2022 5:43:58 PM	<b>Attachments</b>	Yes
	Rationale: The intention is to refer to the Risk Categories of the Florida Building Code - Building, not the Risk Categories of ASCE 7. This corrects an error in the original proposal.					

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact to local entity.

**Impact to building and property owners relative to cost of compliance with code**

No impact to cost of compliance.

**Impact to industry relative to the cost of compliance with code**

No impact to industry.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Corrects an error in the original proposal and clarifies the intent.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade effectiveness of the code.

**MODIFY SECTION 1507.2.7.1 IN THE ORIGINAL MOD AS SHOWN**

**(All changes proposed in Section 1507.2.7.1 of the original MOD have been accepted in the version here to allow the additional modification to be easily seen)**

**1507.2.7.1 Wind resistance of asphalt shingles.** Asphalt shingles shall be tested and classified in accordance with ASTM D3161, ASTM D7158 or TAS 107 and shall meet the required classification in accordance with Table 1507.2.7.1 to resist the applicable wind speed per Figure 1609.3(1), 1609.3(2), 1609.3(3), or 1609.3(4) based on the ~~ASCE 7~~ Risk Category. Asphalt shingle wrappers shall be *labeled* to indicate compliance with one of the required classifications, as shown in Table 1507.2.7.1.

Revise as shown:

**1507.2.5 Asphalt shingles.** Asphalt shingles shall have self-seal strips or be interlocking and comply with ASTM D225 or ASTM D3462. Shingles shall also comply with Table 1507.2.7.1. Asphalt shingle packaging shall bear labeling indicating compliance with one of the required classifications as shown in Table 1507.2.7.1.

**1507.2.7.1 Wind resistance of asphalt shingles.** Asphalt shingles shall be tested and classified in accordance with ASTM D3161, ASTM D7158 or TAS 107 and shall meet the required classification in accordance with Table 1507.2.7.1 to resist the applicable wind speed per Figure 1609.3(1), 1609.3(2), 1609.3(3), or 1609.3(4) based on the ASCE 7 Risk Category. Shingles classified as ASTM D3161 Class D or ASTM D7158 Class G are acceptable for use where  $V_{\text{wind}}$  is equal to or less than 100 mph. Shingles classified as ASTM D3161 Class F, ASTM D7158 Class H or TAS 107 are acceptable for use for all wind speeds. Asphalt shingle wrappers shall be labeled to indicate compliance with one of the required classifications, as shown in Table 1507.2.7.1.

TABLE 1507.2.7.1

CLASSIFICATION OF ASPHALT SHINGLES

MAXIMUM BASIC WIND SPEED FROM FIGURE 1609.3(1), 1609.3(2), 1609.3(3), 1609.3(4) or ASCE 7	$V_{\text{wind}}$ as determined in accordance with Section 1609.3.1	ASTM D7158	ASTM D3161
110	85	D, G or H	D or F
116	90	D, G or H	D or F
129	100	G or H	D or F
142	110	G or H	F
155	120	G or H	F
168	130	H	F
181	140	H	F
194	150	H	F

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R9901

8

Date Submitted	01/13/2022	Section	1507	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Address width of D1970 valley liner.

### Rationale

Although implied, the minimum width of D1970 valley lining is not provided in the existing language of the FBC-Building. This MOD clarifies that underlayment complying with D1970 that is used as valley lining must be at least 36" wide.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

It is unlikely D1970 liners narrower than 36" are being used. However, in any case where a liner less than 36" wide was planned, an increase in cost might occur. The benefit is a more water-resistant valley construction.

#### Impact to industry relative to the cost of compliance with code

Cost of compliance with code is not expected to change.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Removes ambiguity about minimum width of D1970 underlayment used in a closed valley construction.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Removes ambiguity about minimum width of D1970 underlayment used in a closed valley construction.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities



Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

**Does not degrade the effectiveness of the code**

Improves effectiveness of the code by addressing a gap in provisions.

**Revise as shown:**

**1507.2.9.2 Valleys.** Valley linings shall be installed in accordance with the manufacturer's instructions before applying shingles. Valley linings of the following types shall be permitted:

1. For open valleys (valley lining exposed) lined with metal, the valley lining shall be at least 16 inches (406 mm) wide and of any of the corrosion-resistant metals in Table 1503.2.
2. For open valleys, valley lining of two plies of mineral-surfaced roll roofing complying with ASTM D3909 or ASTM D6380 Class M-03 shall be permitted. The bottom layer shall be 18 inches (457 mm) and the top layer a minimum of 36 inches (914 mm) wide.
3. For closed valleys (valleys covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D6380 Class S-03, and at least 36 inches (914 mm) wide or types as described in Item 1 or 2 above shall be permitted. Self-adhering polymer modified bitumen underlayment complying with ASTM D1970 and not less than 36 inches (914 mm) wide shall be permitted in lieu of the lining material.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R9905**

9

Date Submitted	01/13/2022	Section	1507	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Correct D6380 Class references.

### Rationale

The purpose for the “-03” designation behind the Class M and Class S references for ASTM D6380 is uncertain. These designations are not present in the 2014 Edition, but they appear in the 2017 Edition and continue in the 2020 Edition. Also, they are not present in the equivalent R905.2.8.2 section of the residential code, suggesting their presence here is an error. Removal is important to ensure they are not mistakenly construed as a Type designation.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

Corrects an error in the code, so no cost impact is expected.

#### Impact to industry relative to the cost of compliance with code

Corrects an error in the code, so no cost impact is expected.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Corrects an error in the code to improve clarity.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Corrects an error in the code to improve clarity.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

**Does not degrade the effectiveness of the code**  
Improves clarity of the code.

**Revise as shown:**

**1507.2.9.2 Valleys.** Valley linings shall be installed in accordance with the manufacturer's instructions before applying shingles. Valley linings of the following types shall be permitted:

1. For open valleys (valley lining exposed) lined with metal, the valley lining shall be at least 16 inches (406 mm) wide and of any of the corrosion-resistant metals in Table 1503.2.
2. For open valleys, valley lining of two plies of mineral-surfaced roll roofing complying with ASTM D3909 or ASTM D6380 Class M-03 shall be permitted. The bottom layer shall be 18 inches (457 mm) and the top layer a minimum of 36 inches (914 mm) wide.
3. For closed valleys (valleys covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D6380 Class S-03, and at least 36 inches (914 mm) wide or types as described in Item 1 or 2 above shall be permitted. Self-adhering polymer modified bitumen underlayment complying with ASTM D1970 shall be permitted in lieu of the lining material.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R9910**

10

Date Submitted	01/18/2022	Section	1518	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

9909

### Summary of Modification

Nail penetration distance.

### Rationale

This modification related to fastener penetration is consistent with guidance from ARMA and NRCA. Companion MOD 9909 makes the same change in RAS 115.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

Clarifications should not impact cost of compliance.

#### Impact to industry relative to the cost of compliance with code

Clarifications should not impact cost of compliance.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Adjusts nail penetration to industry standard to clarify requirement for installers.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Adjusts nail penetration to industry standard to clarify requirement for installers.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

#### Does not degrade the effectiveness of the code

Does not degrade code effectiveness.

**Revise FBC-Building as shown:**

**1518.7.3.2** Asphaltic shingles shall be installed in compliance with the product approval, but in no case with less than six approved roofing nails or approved fastening devices which penetrate through the thickness of sheathing or wood plank a minimum of ~~3/16~~ 1/8 inch (4.8 3.2 mm) or penetrate into a 1 inch (25 mm) or greater thickness of lumber a minimum of 1 inch (25 mm), except where architectural appearance is to be preserved, in which case a minimum of 3/4 inch (19 mm) ring shank roofing nail may be used.



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R9912

11

Date Submitted	01/18/2022	Section	1518	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

9911

### Summary of Modification

Installation of rake shingles.

### Rationale

This modification clarifies the intent to interlace roof cement between shingles along rakes to provide increased wind resistance. Also, it replaces references to “cold adhesive” with “roof cement” to standardize the terminology within this section. According to TAS 110, asphalt roof cement is required to comply with ASTM D4586. Companion MOD 9911 makes a similar change in RAS 115.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

This is intended as a clarification. Enforcement may be affected if this practice is not being performed.

#### Impact to building and property owners relative to cost of compliance with code

This is intended as a clarification. If this practice is not being performed, cost may be impacted.

#### Impact to industry relative to the cost of compliance with code

No impact expected to cost of compliance.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Clarifies requirement for asphalt shingle installation at rakes to support wind resistance.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Clarifies requirement for asphalt shingle installation at rakes to support wind resistance.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade code effectiveness.

**Revise FBC-Building as shown:**

**1518.7.3.3** Intersections, eaves, rakes, valleys, gable ends, and the starter course of asphaltic shingles shall be set in an 8-inch (203 mm) wide bed of approved ~~cold adhesive or roofing~~ cement. Application of ~~adhesive or roof~~ cement shall be in compliance with the application instructions of the product approval. Approved roof cement shall be interlaced between shingle courses along rakes. Shingles shall not extend more than 1/4 inch (6.4 mm) beyond the eave drip.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R9918

12

Date Submitted	01/18/2022	Section	1512	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Pointer to statute.

### Rationale

The additional language reminds individual jurisdictions that are considering enforcement of the HVHZ provisions of the need for consistency with FBC requirements and that adherence to proper due process is necessary.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

Refers local entities to Florida statutory requirements.

#### Impact to building and property owners relative to cost of compliance with code

No cost of compliance impact.

#### Impact to industry relative to the cost of compliance with code

No cost of compliance impact.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Local jurisdictions may adopt HVHZ provisions, subject to Florida Statutes section 553.73.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Local jurisdictions may adopt HVHZ provisions, subject to Florida Statutes section 553.73.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

#### Does not degrade the effectiveness of the code

Does not degrade effectiveness of the code.

**Revise FBC-Building as shown:**

**1512.2 Application.** These high-velocity hurricane zone roofing requirements with associated roofing application standards (RAS) and testing application standards (TAS) are to be implemented in the HVHZ, or where the jurisdiction having authority has adopted their use in accordance with Section 553.73 of the Florida Statutes.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R9919**

13

Date Submitted	01/18/2022	Section	1518	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Tile underlayments meet TAS 103 or TAS 104.

### Rationale

This modification inserts a new pointer in Florida Building Code – Building Section 1518.4 to clarify that self-adhering and mechanically fastened underlayment for use with tile roof systems must comply with TAS 103 and TAS 104, respectively.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

This clarification should have no cost of compliance impact.

#### Impact to industry relative to the cost of compliance with code

This clarification should have no cost of compliance impact.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Clarifies existing requirements for underlayments used with tile roof systems to remove ambiguity.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Clarifies existing requirements for underlayments used with tile roof systems to remove ambiguity.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

#### Does not degrade the effectiveness of the code

Improves code effectiveness by reducing ambiguity.

**Revise FBC-Building as shown:**

**1518.4** All underlayment applications for prepared roof coverings shall be applied in compliance with the manufacturer roofing assembly product approval, and shall be not less than one of the following: (1) a double layer of an ASTM D226 Type I, with a 19-inch (483 mm) headlap; or (2) a single layer of an ASTM D226, Type II with a 4-inch (102 mm) headlap or (3) a single layer of an ASTM D2626 coated base sheet with a 4-inch (102 mm) headlap, and (4) all endlaps shall be a minimum of 6 inches (152 mm). Self-adhering underlayment intended for use under tile systems shall be an Approved underlayment in accordance with TAS 103. Mechanically fastened underlayment intended for use under tile systems shall be an Approved underlayment in accordance with TAS 104.



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R9920

14

Date Submitted	01/18/2022	Section	1518	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Asphaltic to asphalt.

### Rationale

This modification is intended to make references to asphalt shingles consistent throughout the Florida Building Code - Building, Florida Building Code – Residential, the Roofing Application Standards, and the Testing Application Standards.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

This is a clarification and has no impact on local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

This clarification has no impact on cost of compliance.

#### Impact to industry relative to the cost of compliance with code

This clarification has no impact on cost of compliance.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Promotes use of accurate and consistent language throughout the Florida family of codes.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Promotes use of accurate and consistent language throughout the Florida family of codes.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

#### Does not degrade the effectiveness of the code

Improves the effectiveness of the code through use of accurate and consistent language.

**Revise FBC-Building as shown:**

**1518.7 Asphaltie shingles.** Asphaltie shingles layout, alignment and placement of mechanical attachment shall be in compliance with the product approval, and shall be installed in accordance with RAS 115.

**1518.7.2** Installation of all asphaltie shingles shall be limited to a roof mean height of 33 feet (10 m), unless otherwise specifically noted in the product approval.

**1518.7.3** The asphaltie shingle product approval shall meet the following minimum requirements.

**1518.7.3.1** Where asphaltie shingles are to be installed over insulated roof deck, a suitable nailable substrate, in accordance with Section 1520.5.7 must be installed over the insulation prior to the installation of approved underlayment and shingles.

**1518.7.3.2** Asphaltie shingles shall be installed in compliance with the product approval, but in no case with less than six approved roofing nails or approved fastening devices which penetrate through the thickness of sheathing or wood plank a minimum of 3/16 inch (4.8 mm) or penetrate into a 1 inch (25 mm) or greater thickness of lumber a minimum of 1 inch (25 mm), except where architectural appearance is to be preserved, in which case a minimum of 3/4 inch (19 mm) ring shank roofing nail may be used.

**1518.7.3.3** Intersections, eaves, rakes, valleys, gable ends, and the starter course of asphaltie shingles shall be set in an 8-inch (203 mm) wide bed of approved cold adhesive or roofing cement. Application of adhesive or cement shall be in compliance with the application instructions of the product approval. Shingles shall not extend more than 1/4 inch (6.4 mm) beyond the eave drip.

**1518.7.3.5** Asphaltie shingles shall be tested in compliance with the provisions set forth in Section 1523.

**1518.9.3** Metal shingles may be applied as a recover over a single layer of asphaltie shingles or smooth surface roofing, providing the deck is solid sheathed and in compliance with the provisions of this code, the existing prepared roof covering is in compliance with provisions of this code and the entire metal shingle system is applied as set forth in the product approval.

**SECTION 1525****HIGH-VELOCITY HURRICANE ZONES—UNIFORM PERMIT APPLICATION**

*Florida Building Code 7th Edition (2020)*

**High-Velocity Hurricane Zone Uniform Permit Application Form**

**INSTRUCTION PAGE**

**COMPLETE THE NECESSARY SECTIONS OF THE UNIFORM ROOFING PERMIT APPLICATION FORM AND ATTACH THE REQUIRED DOCUMENTS AS NOTED BELOW:**

Roof System	Required Sections of the Permit Application Form	Attachments Required See List Below
Low Slope Application	A,B,C	1,2,3,4,5,6,7

Prescriptive BUR-RAS150	A,B,C	4,5,6,7
Asphaltic Shingles	A,B,D	1,2,4,5,6,7
Concrete or Clay Tile	A,B,D,E	1,2,3,4,5,6,7
Metal Roofs	A,B,D	1,2,3,4,5,6,7
Wood Shingles and Shakes	A,B,D	1,2,4,5,6,7
Other	As Applicable	1,2,3,4,5,6,7

• ATTACHMENTS REQUIRED:

1.	Fire Directory Listing Page
2.	From Product Approval: Front Page Specific System Description Specific System Limitations General Limitations Applicable Detail Drawings
3.	Design Calculations per Chapter 16, or if applicable, RAS 127 or RAS 128
4.	Other Component of Product Approval
5.	Municipal Permit Application
6.	Owners Notification for Roofing Considerations (Reroofing Only)
7.	Any Required Roof Testing/Calculation Documentation

**Florida Building Code 7th Edition (2020)**

**High-Velocity Hurricane Zone Uniform Permit Application Form**

**Section A (General Information)**

Master Permit No. \_\_\_\_\_ Process No. \_\_\_\_\_

Contractor's Name \_\_\_\_\_

Job Address \_\_\_\_\_

**ROOF CATEGORY**

- ☐ Low Slope                      ☐ Mechanically Fastened Tile                      ☐ Mortar/Adhesive Set Tiles  
☐ Asphaltic Shingles                      ☐ Metal Panel/Shingles                      ☐ Wood Shingles/Shakes  
☐ Prescriptive BUR-RAS150

**ROOFTYPE**

- ☐ New roof                      ☐ Repair                      ☐ Maintenance                      ☐ Reroofing                      ☐ Recovering

**ROOF SYSTEM INFORMATION**

Low Slope Roof Area(SF)\_\_\_\_\_ Steep Sloped Roof Area (SF)\_\_\_\_\_ Total (SF)\_\_\_\_\_

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R9921**

15

Date Submitted	01/18/2022	Section	1518	Proponent	Aaron Phillips
Chapter	15	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Shingle overhang at rakes.

### Rationale

This modification stipulates the same shingle overhang requirement along rakes that is prescribed for eaves. This rake overhang requirement is already present in RAS 115.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity relative to enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

This provision already exists, so there should be no impact on cost of compliance.

#### Impact to industry relative to the cost of compliance with code

This provision already exists, so there should be no impact on cost of compliance.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Creates consistency between the Roofing Application Standards and HVHZ provisions.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Creates consistency between the Roofing Application Standards and HVHZ provisions.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

#### Does not degrade the effectiveness of the code

Improves the effectiveness of the code by creating consistency across sections.

**Revise FBC-Building as shown:**

**1518.7.3.3** Intersections, eaves, rakes, valleys, gable ends, and the starter course of asphaltic shingles shall be set in an 8-inch (203 mm) wide bed of approved cold adhesive or roofing cement. Application of adhesive or cement shall be in compliance with the application instructions of the product approval. Shingles shall not extend more than 1/4 inch (6.4 mm) beyond the eave and rake drip.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R9949**

16

Date Submitted	01/24/2022	Section	1507.3	Proponent	Michael Silvers (FRSA)
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

Building Code Chapter 35 Residential Code 905.3 Residential Code Chapter 46

### Summary of Modification

This modification updates Referenced Standard FRSA/TRI High Wind Concrete and Clay Roof Tile Manual from the Sixth to the Seventh Edition

### Rationale

This modification updates Referenced Standard: FRSA/TRI High Wind Concrete and Clay Roof Tile Manual from the Sixth to the Seventh Edition. The manual is being updated to comply with ASCE 7-22.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**



Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

**1507.3 Clay and concrete tile.**

The installation of clay and concrete tile shall comply with the provisions of this section.

**1507.3.1 Deck requirements.**

Concrete and clay tile shall be installed only over solid sheathing except where the roof covering is specifically designed and tested in accordance with Section 1609.5.2 to be applied over structural spaced sheathing boards

**1507.3.2 Deck slope.**

Clay and concrete roof tile shall be installed in accordance with the recommendations of FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition where the Vasd is determined in accordance with Section 1609.3.1 or the recommendations of RAS 118, 119 or 120.

**1507.3.3 Underlayment.**

Unless otherwise noted, underlayment shall be applied according to the underlayment manufacturer's installation instructions or the recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition where the basic wind speed, Vasd, is determined in accordance with Section 1609.3.1 or the recommendations of RAS 118, 119 or 120.

**1507.3.3.1 Slope and underlayment requirements.**

Refer to FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition where the basic wind speed Vasd is determined in accordance with Section 1609.3.1 for underlayment and slope requirements for specific roof tile systems or the recommendations of RAS 111, 118, 119 or 120.

**1507.3.3.2 High-slope roofs.**

Reserved.

**1507.3.3.3 High wind attachment.**

Reserved.

**1507.3.4 Clay tile.**

Clay roof tile shall comply with ASTM C1167.

**1507.3.5 Concrete tile.**

Concrete roof tile shall comply with ASTM C1492.

**1507.3.6 Fasteners.**

Tile fasteners shall be corrosion resistant and not less than 11-gage, 5/16-inch (8.0 mm) head, and of sufficient length to penetrate the deck a minimum of 3/4 inch (19.1 mm) or through the thickness of the deck, whichever is less. Attaching wire for clay or concrete tile shall not be smaller than 0.083 inch (2.1 mm). Perimeter fastening areas include three tile courses but not less than 36 inches (914 mm) from either side of hips or ridges and edges of eaves and gable rakes.

**1507.3.7 Attachment.**

Clay and concrete roof tiles shall be fastened in accordance with Section 1609 or in accordance with FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition where the basic wind speed,  $V_{asd}$ , is determined in accordance with Section 1609.3.1.

**Table 1507.3.7 Clay and Concrete Tile Attachment.**

Reserved.

**1507.3.8 Application.**

Tile shall be applied according to the manufacturer's installation instructions or recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition where the basic wind speed,  $V_{asd}$ , is determined in accordance with Section 1609.3.1 or the recommendation of RAS 118, 119 or 120.

**1507.3.9 Flashing.**

At the juncture of the roof vertical surfaces, flashing and counterflashing shall be provided in accordance with the manufacturer's installation instructions or the recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition where the basic wind speed,  $V_{asd}$ , is determined in accordance with Section 1609.3.1 or the recommendation of RAS 118, 119 or 120.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R9952**

17

Date Submitted	01/24/2022	Section	1515.2	Proponent	Michael Silvers (FRSA)
Chapter	15	Affects HVHZ	Yes	Attachments	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Removes a reference to outdated standard in footnote 1. in the table.

### Rationale

FM 4471, Appendix G. is no longer valid, FM dropped it from their test criteria.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

TABLE 1515.2 MINIMUM SLOPE

SYSTEM TYPE	SLOPE
Fibrous Cement Shingles	4:12
Metal Panels	2:12 <sup>1</sup>
Architectural	
Metal Shingles	4:12
Mortar or Adhesive Tile	2:12
Mechanically Fastened Tile	4:12
Asphalt Shingles	2:12
Laminated	
3-Tab	2:12
Quarry Slate	3 <sup>1</sup> / <sub>2</sub> :12
Wood	4:12
Shakes	
Shingles	3 <sup>1</sup> / <sub>2</sub> :12

seam metal roof panel systems that pass the requirements of the Static Water Leakage Test criteria of FM 4471, Appendix 1. Standing  
 G or ASTM E2140 shall be permitted to be installed to a minimum slope of 1:12.



# **Approval Standard for Class 1 Panel Roofs**

**Class Number 4471**

**March 2010**

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## Foreword

The FM Approvals certification mark is intended to verify that the products and services described will meet stated conditions of performance, safety and quality useful to the ends of property conservation. The purpose of Approval Standards is to present the criteria for FM Approval of various types of products and services, as guidance for FM Approvals personnel, manufacturers, users and authorities having jurisdiction.

Products submitted for certification by FM Approvals shall demonstrate that they meet the intent of the Approval Standard, and that quality control in manufacturing and/or applications shall ensure a consistently uniform and reliable product or service. Approval Standards strive to be performance-oriented and to facilitate technological development.

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- a) must be useful to the ends of property conservation by preventing, limiting or not causing damage under the conditions stated by the Approval listing; and
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Continuance of Approval and Listing depends on compliance with the Approval Agreement, satisfactory performance in the field, on successful re-examinations of equipment, materials and services as appropriate, and on periodic follow-up audits of the manufacturing facility or service/application.

FM Approvals LLC reserves the right in its sole judgment to change or revise its standards, criteria, methods or procedures.

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## 1 INTRODUCTION

### 1.1 Purpose

- 1.1.1 This standard states Approval requirements for Class 1 Panel Roofs. A Class 1 Panel Roof is one which meets the criteria of this standard for fire, wind, foot traffic, and hail damage resistance.
- 1.1.2 Approval criteria may include, but are not limited to, performance requirements, marking requirements, examination of manufacturing facility (ies), audit of quality assurance procedures, and a follow-up program.

### 1.2 Scope

- 1.2.1 This standard sets performance requirements for panel roofs which include all components necessary for installation of the panel roof assembly. The assembly which exhibits low fire spread below and above the panel, adequate simulated wind uplift resistance, and adequate strength and durability during the Approval examination will qualify as a Class 1 assembly. To be rated as a Class 1 panel roof assembly, only Class 1 Approved components may be used.
- 1.2.2 This standard applies to any component intended for use in assembling a panel roof, including metal and plastic panel roofs.
- 1.2.3 The performance of a panel roof depends in part on all components in its makeup, and on how these components interact. It is therefore necessary to evaluate the roof assembly as a whole when measuring the potential for fire spread on the underside and exterior of the roof, and/or its ability to resist wind forces.

### 1.3 Basis for Requirements

- 1.3.1 The requirements of this standard are based on experience, research and testing, and/or the standards of other organizations. The advice of manufacturers, users, trade associations, jurisdictions and loss control specialists was also considered.
- 1.3.2 The requirements of this standard reflect tests and practices used to examine characteristics of panel roofs for the purpose of obtaining Approval. Panel roofs having characteristics not anticipated by this standard may be FM Approved if performance equal, or superior, to that required by this standard is demonstrated, or if the intent of the standard is met. Alternatively, panel roofs which meet all of the requirements identified in this Standard may not be FM Approved if other conditions which adversely affect performance exist or if the intent of this standard is not met.

### 1.4 Basis for Approval

Approval is based upon satisfactory evaluation of the product and the manufacturer in the following major areas:

- 1.4.1 Examination and tests on production samples shall be performed to evaluate
  - the suitability of the product;
  - the performance of the product as specified by the manufacturer and required by FM Approvals; and as far as practical,

FM Approvals 1

From: Tyrol, Mark <[mark.tyrol@fmapprovals.com](mailto:mark.tyrol@fmapprovals.com)>  
Sent: Monday, June 20, 2016 9:03 AM  
To: Delfino, Sal <[sdelfino@petersemail.com](mailto:sdelfino@petersemail.com)>  
Subject: RE: FM4471 App. G

Hello Sal,

We no longer have a water leakage test requirement in the FM 4471 Approval Standard. So the reference to FM 4471 App. G should be removed. We will contact Miami-Dade to let them know.

Thank you and regards,

Mark Tyrol  
FM Approvals

Mark D. Tyrol, P.E. | Senior Engineer - Materials, Americas Business Development  
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[www.fmapprovals.com](http://www.fmapprovals.com) | [www.roofnav.com](http://www.roofnav.com) | [www.approvalguide.com](http://www.approvalguide.com)



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# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R9953**

18

Date Submitted	01/25/2022	Section	1504.2	Proponent	Michael Silvers (FRSA)
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Adds new roof tile underlayment testing standard to 1504.2 Wind resistance of clay and concrete tile..

### Rationale

Tile roof coverings must provide resistance to uplift forces. The ability to transfer those forces through a load path to the roof deck is critical. The non-air permeable underlayment is a component in the load path and must be considered. A test criteria to demonstrate the proper uplift resistance is needed. FM 4474 and UL 1897 have been referenced in the code for the testing other types of membrane roof coverings since at least the 2010 FBC and are proven test methods.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

**1504.2.1 Testing.**

**Testing of underlayment or underlayment assembly for clay and concrete tile roof coverings shall be in accordance with section 1504.2.1.1.**

**1504.2.1.1 Underlayment testing.**

Adhered or mechanically attached tile underlayment or underlayment assemblies shall be tested in accordance with FM 4474 or UL 1897.

**Testing of concrete and clay roof tiles shall be in accordance with Section 1504.2.1.12 and 1504.2.1.23.**

**1504.2.1.12 Overturning resistance.**

Concrete and clay roof tiles shall be tested to determine their resistance to overturning due to wind in accordance with SBCCI SSTD 11 and Chapter 15.

**1504.2.1.23 Wind tunnel testing.**

Where concrete and clay roof tiles do not satisfy the limitations in Chapter 16 for rigid tile, a wind tunnel test shall be used to determine the wind characteristics of the concrete or clay tile roof covering in accordance with SBCCI SSTD 11 and Chapter 15

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R9955**

19

Date Submitted	01/25/2022	Section	1502	Proponent	Michael Silvers (FRSA)
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments Yes**

**Alternate Language No**

### Related Modifications

Building Chapter 2 Definitions Residential Chapter 2 Definitions

### Summary of Modification

Changes "Roof Covering System" to "Roof System" which is used throughout roofing sections. After "Roof Covering System" user is directed to "Roof Assembly". A Roof Assembly includes the deck where a "Roof Covering System" does not. Also clarifies definition of "Roof Assembly".

### Rationale

Changes the term "Roof Covering System" which is not regularly referred to in the code to "Roof System" which is used consistently throughout roofing sections of the code. Current direction after "Roof Covering System" states to see "Roof Assembly" which is not accurate. A Roof Assembly includes the deck where a Roof System does not. Also clarifies definition of "Roof Assembly".

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

## 1st Comment Period History

20955-G1	Proponent	Sam Francis	Submitted	4/9/2022 10:45:11 AM	Attachments	No
	Comment: The American Wood Council submits the following comment: This change adds confusion rather than providing clarification. "Roof System" is not used in the roof assembly definition but appears to be part of the roof assembly.					

*Previous definitions remain unchanged. Some unchanged definitions below are shown for clarity.*

**ROOF ASSEMBLY.** A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly includes the roof covering roof deck, and may include a vapor retarder, substrate or thermal barrier, insulation or similar substrate and roof covering.

*The definition of "Roof assembly" is limited in application to the provisions of Chapter 15.*

**ROOF COVERING.** The covering applied to the roof deck for weather resistance, fire classification or appearance.

**ROOF COVERING SYSTEM.** See "Roof assembly."

**ROOF DECK.** The flat or sloped surface not including its supporting members or vertical supports.

**ROOF RECOVER.** The process of installing an additional roof covering over a prepared existing roof covering without removing the existing roof covering.

**ROOF REPAIR.** Reconstruction or renewal of any part of an existing roof for the purposes of its maintenance.

**ROOF REPLACEMENT.** The process of removing the existing roof covering, repairing any damaged substrate and installing a new roof covering.

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

**ROOF SYSTEM.** A roof system consists of a roof covering and other interacting roofing components and may include vapor retarder, thermal barrier, insulation or other similar substrate. The system does not include the roof deck unless it is part of a single component serving as the roof covering and the roof deck.

*Remaining definitions remain unchanged*



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R9961

20

Date Submitted	02/01/2022	Section	1504.2	Proponent	Michael Silvers (FRSA)
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments Yes**

**Alternate Language No**

### Related Modifications

Residential Chapter 9 Section R905.3.3

### Summary of Modification

Adds an exception for tile roof coverings over an existing self-adhering modified bitumen underlayment similar to the one in 1507.1.1.1 for other steep slope roof coverings.

### Rationale

Existing self-adhering underlayments are being encountered during reroofing. A method to install new mechanically attached underlayments over the self-adhering underlayment was added to the code as an exception to 1507.1.1.1 - 1. to address other steep slope roof coverings. This very similar exception addresses tile roof coverings in the same manner.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

## 1st Comment Period History

29961-G1	Proponent	Paul Malanaphy	Submitted	3/9/2022 3:43:28 PM	Attachments	No
	Comment:	Is this to say that only a mechanically fastened, 2 ply system can be installed over a previously installed self-adhered product. Are there no self-adhered manufacturer's that permit an additional self-adhered over a previously installed self-adhered product?				

**1507.3.3 Underlayment.** Unless otherwise noted, underlayment shall be applied according to the underlayment manufacturer's installation instructions or the recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the basic wind speed,  $V_{asd}$ , is determined in accordance with Section 1609.3.1 or the recommendations of RAS 118, 119 or 120.

Exception: Where an existing self-adhering modified bitumen underlayment that has been previously installed over the roof decking and, where it is required, renailing of 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 a two-ply system as described in the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition shall be applied over the entire roof over the existing self-adhered modified bitumen underlayment.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R9990**

21

Date Submitted	02/01/2022	Section	1507.2.9.3	Proponent	Michael Silvers (FRSA)
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

Residential Chapter9 Section R905

### Summary of Modification

Eliminates option to install the drip edge at eave under the underlayment except when using a self-adhering underlayment.

### Rationale

Allowing the underlayment to be installed over the drip edge at the eaves offers no resistance to wind uplift and little resistance to water intrusion. This change uses the existing gable language for both eaves and gables (rakes). It does allow self-adhering underlayment to be installed over the primed drip edge flange.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**  
Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

1507.2.9.3 Drip edge. Provide drip edge at eaves and gables of shingle roofs. Overlap is to be a minimum of 3 inches (76 mm). Eave drip edges shall extend 1/2 inch (13 mm) below sheathing and extend back on the roof a minimum of 2 inches (51 mm). Drip edge at gables shall be installed over the underlayment. ~~Drip edge at eaves be permitted to be installed either over or under the underlayment. If installed over the underlayment, Self-adhering underlayment may be installed over a primed drip edge flange.~~ There shall be a minimum 4 inches (51 mm) width of roof cement installed over the drip edge flange or the self-adhering underlayment. Drip edge shall be mechanically fastened a maximum of 12 inches (305 mm) on center. Where the Vasd, as determined in accordance with Section 1609.3.1, is 110 mph (177 km/h) or greater or the mean roof height exceeds 33 feet (10 058 mm), drip edges shall be mechanically fastened a maximum of 4 inches (102 mm) on center.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R9998

22

Date Submitted	02/02/2022	Section	1507.3	Proponent	Michael Silvers (FRSA)
Chapter	15	Affects HVHZ	No	Attachments	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments Yes**

**Alternate Language No**

### Related Modifications

Residential Chapter 9 Roof Assemblies Section 905.3

### Summary of Modification

Removes references to Miami/Dade Roofing Application Standards (RAS) 118, 119 or 120 for tile roofs from standard (Non HVHZ) sections of the roofing chapters.

### Rationale

Prescriptive methods described in the tile related RAS and TAS standards have been called into question. Underlayment applications described in the standards when tested using currently available performance testing standards indicate that some of the underlayment material and the fastener placement and density do not meet the current wind uplift resistance requirements based on ASCE-7. Test results from testing commissioned by FRSA using these proposed test standards are attached and indicate very low resistance to uplift pressures for systems described in the RAS and TAS. The numbers shown in Test 2 are before applying the safety factor of two that further reduces the listed uplift resistance of the underlayment. Independent testing by manufacturers of underlayment components produced similar results. The uplift resistance shown in many product approvals also confirms the need for these changes.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**  
Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**  
Does not discriminate.

**Does not degrade the effectiveness of the code**  
Does not degrade.

## 1st Comment Period History

29998-G1	Proponent	Paul Malanaphy	Submitted	3/10/2022 12:16:53 PM	Attachments	No
	Comment: This modification will eliminate the misconception that installation in accordance with RAS 118, 119 or 120 meets all required wind loads. I am in full support.					



### 1507.3.2 Deck slope.

Clay and concrete roof tile shall be installed in accordance with the recommendations of FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the Vasd is determined in accordance with Section 1609.3.1 ~~or the recommendations of RAS 118, 119 or 120.~~

### 1507.3.3 Underlayment.

Unless otherwise noted, underlayment shall be applied according to the underlayment manufacturer's installation instructions or the recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the basic wind speed, Vasd, is determined in accordance with Section 1609.3.1 ~~or the recommendations of RAS 118, 119 or 120.~~

#### 1507.3.3.1 Slope and underlayment requirements.

Refer to FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the basic wind speed Vasd is determined in accordance with Section 1609.3.1 for underlayment and slope requirements for specific roof tile systems ~~or the recommendations of RAS 111, 118, 119 or 120.~~

### Clay and Concrete Tile Attachment

### 1507.3.8 Application.

Tile shall be applied according to the manufacturer's installation instructions or recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the basic wind speed, Vasd, is determined in accordance with Section 1609.3.1 ~~or the recommendation of RAS 118, 119 or 120.~~

### 1507.3.9 Flashing.

At the juncture of the roof vertical surfaces, flashing and counterflashing shall be provided in accordance with the manufacturer's installation instructions or the recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the basic wind speed, Vasd, is determined in accordance with Section 1609.3.1 ~~or the recommendation of RAS 118, 119 or 120.~~



## PRI Construction Materials Technologies LLC

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### Laboratory Test Report

<b>Report for:</b>	Mike Silvers FRSA 3855 N. Econlockhatchee Trail Orlando, FL 32817	
<b>Product Name:</b>	Self-adhered underlayment applied to ASTM D226 anchor sheet	
<b>Project No.:</b>	2368T0002	
<b>Dates Tested:</b>	May 10, 2021	
<b>Test Methods:</b>	UL 1897-12	
<b>Purpose:</b>	Determine uplift resistance in accordance with <b>UL 1897-12 Uplift Tests for Roof Covering Systems.</b>	
<b>Test Methods:</b>	Testing was completed as described in UL 1897-12 <i>Uplift Tests for Roof Covering Systems</i> . Specimens were incrementally loaded in accordance with UL 1897 until failure.	
<b>Deck Description:</b>	<b>Framing:</b>	2x10 No. 2 SYP lumber installed 24" o.c.
	<b>Deck:</b>	15/32 APA rated plywood sheathing installed over No. 2 lumber supports spaced 24" on center. Decking was attached with 2-3/8 inch x 0.113 inch ring shank nails spaced 6" o.c. along the perimeter and intermediate supports.
	<b>Underlayment:</b>	An anchor sheet of ASTM D226 type II material was mechanically attached to sheathed specimen with 12ga, 1-1/4 inch long, galvanized, ring shank, roofing nails placed through 32ga, 1-5/8 inch diameter tin caps (see Results Table for spacing details). A self-adhering underlayment was applied atop the mechanically attached anchor sheet in accordance with manufacturer's installation instructions. The laps of the self-adhered underlayment were backnailed with 12ga, 1-1/4 inch long, galvanized, ring shank, roofing nails placed through 32ga, 1-5/8 inch diameter tin caps and spaced 12 inches on center along the lap.

#### 2368T0002.1

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FRSA  
UL 1897 for  
Underlayment application  
Page 2 of 7

**Results:**

Table 1. Summary of Test Results

Specimen No.	Underlayment	Attachment	Passing Uplift Pressure (psf)	Failure Mode
1	2 / A	Fastened in lap 6 in o.c. 2 rows in the field @ 12 in o.c.	30	Fastener Pull-through
2	2 / A	Fastened in lap 6 in o.c. 3 rows in the field @ 8 in o.c.	45	Fastener Pull-through
3	2 / A	Plywood joints taped <sup>1</sup> Fastened in lap 6 in o.c. 3 rows in the field @ 8 in o.c.	60	Fastener Pull-through
4	2 / D	Fastened in lap 6 in o.c. 2 rows in the field @ 12 in o.c.	30	Fastener Pull-through
5	2 / D	Fastened in lap 6 in o.c. 3 rows in the field @ 8 in o.c.	60	Fastener Pull-through

Notes: 1 - Specimen #3 construction details included taping of the plywood joints with AAMA 711 compliant seam tape.

**Statement of Attestation:**

Testing was conducted in accordance with **UL 1897-12 Uplift Tests for Roof Covering Systems**. The test results and interpretations presented herein are representative of the materials supplied by the client.

Signed: \_\_\_\_\_

  
Jason Simmons  
Director

**Report Issue History:**

Issue #	Date	Pages	Revision Description (if applicable)
Original	07/07/2021	8	NA
Revision	07/14/2021	7	Remove product identification

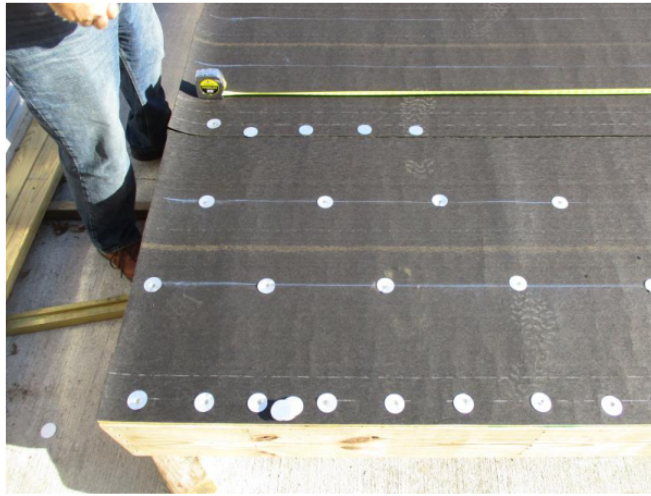
**APPENDIX ATTACHED**

**Appendix A: Representative Photographs**

2368T0002.1

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FRSA  
UL 1897 for  
Underlayment application  
Page 3 of 7



**Specimen #1 (typ.): Layout 6" OC in Lap and 2 rows at 12" OC in the field**



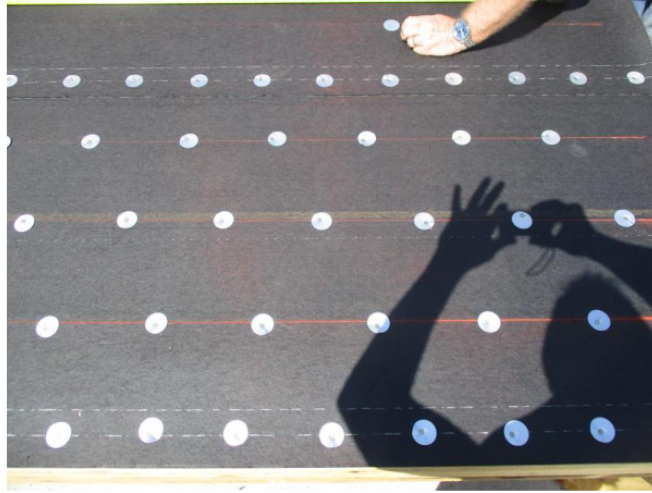
**Specimen #1 failure – fastener pull-through**

#### 2368T0002.1

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FRSA  
UL 1897 for  
Underlayment application  
Page 4 of 7



**Specimen #2 (typ.): Layout 6" OC in Lap and 3 rows at 8" OC in the field**



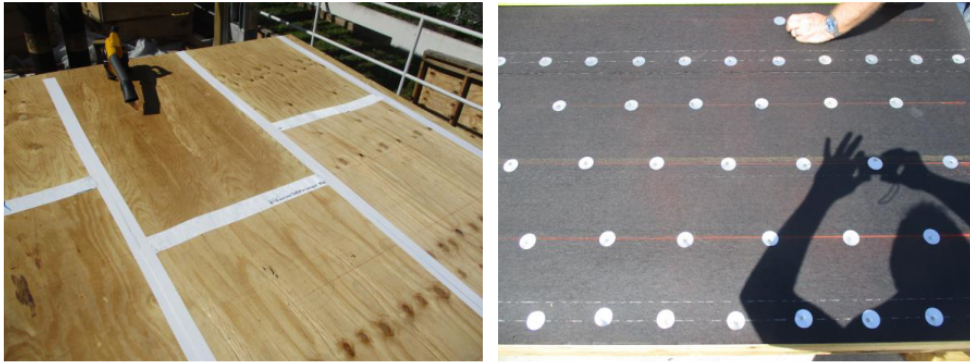
**Specimen #2 failure – fastener pull-through**

#### 2368T0002.1

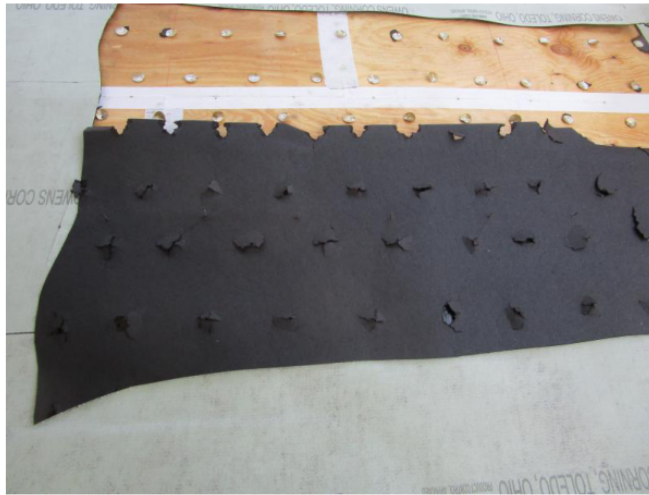
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FRSA  
UL 1897 for  
Underlayment application  
Page 5 of 7



**Specimen #3 (typ.): Layout 6" OC in Lap and 3 rows at 8" OC in the field over taped plywood joints**



**Specimen #3 failure – fastener pull-through**

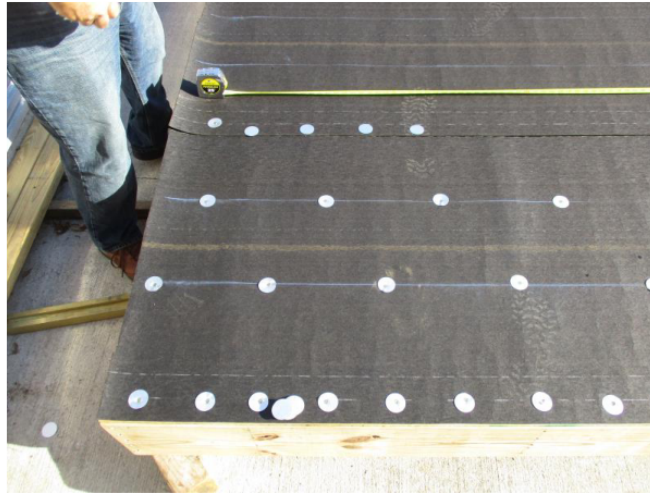
#### 2368T0002.1

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FRSA  
UL 1897 for  
Underlayment application  
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**Specimen #4 (typ.): Layout 6" OC in Lap and 2 rows at 12" OC in the field**



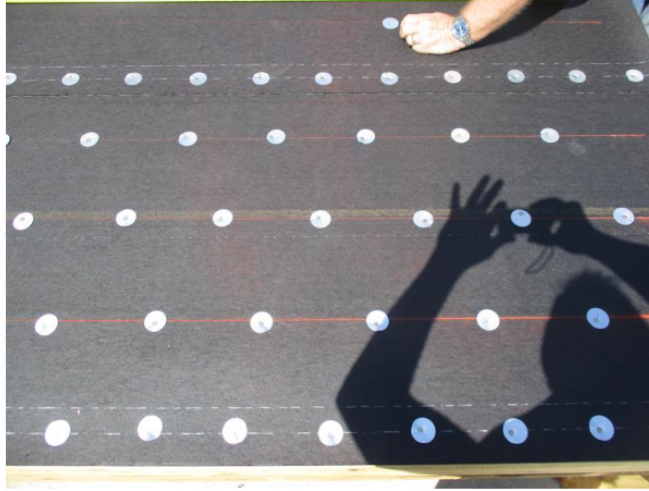
**Specimen #4 failure – fastener pull-through**

2368T0002.1

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**Specimen #5 (typ.): Layout 6" OC in Lap and 3 rows at 8" OC in the field**



**Specimen #5 failure – fastener pull-through**

**END OF REPORT**

2368T0002.1

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**PRI Construction Materials Technologies LLC**

6412 Badger Drive

Tampa, FL 33610

813.621.5777

<https://www.pri-group.com/>**Test Status Email**

**Report for:** Mike Sivers  
FRSA  
3855 N. Econlockhatchee Trail  
Orlando, FL

**Product Name:** Various D226 30# underlayments and various self-adhering underlayments

**Project No.:** 2368T0001

**Dates Tested:** April 1, 2021 – April 2, 2021

**Test Methods:** ASTM D1876 T-peel  
TAS 117 (B) fastener pull-through

**Results Summary:** *See Results table herein*

Mike,

Per your request, PRI completed resistance to T-peel between PSU30 and four (4) different ASTM D226, 30# underlayments. Identifying the 30# with which the PSU30 adhered the best, we completed testing for adhesion between that underlayment and the other three (3) self adhered products.

Additionally, we completed fastener pull-through testing in accordance with TAS 117 (B) for the four 30# underlayments.

The results of testing can be found herein in the following two results tables.

Please pass this on to your counterparts in preparation for the assembly work next week.

Feel free to call or email with any questions:

-Jason

2368T0001

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FRSA  
ASTM D1876 and TAS 117 (B) for  
30# anchor sheets and sa underlayments  
Page 2 of 3

## ASTM D1876 T-Peel

Sample	Test Method	Results							
T-Peel Strength (lbf/in); 10 specimens; 1in x 12in; Test Rate @ 10in/min; Self adhered to anchor sheet	ASTM D1876								
1 / A		1	2	3	4	5	Avg.	St. Dev	
		1.18	1.01	1.01	1.46	0.88			
		6	7	8	9	10			
		0.93	0.86	0.70	0.83	0.74	0.96	0.22	
1 / B		1	2	3	4	5	Avg.	St. Dev	
		0.54	0.42	0.49	0.39	0.46			
		6	7	8	9	10			
		0.73	0.40	0.41	0.49	0.50	0.48	0.10	
1 / C		1	2	3	4	5	Avg.	St. Dev	
		0.36	0.26	0.37	0.35	0.35			
		6	7	8	9	10			
		0.36	0.32	0.45	0.35	0.48	0.37	0.06	
1 / D		1	2	3	4	5	Avg.	St. Dev	
		0.53	0.57	0.59	0.62	0.53			
		6	7	8	9	10			
		0.58	0.47	0.56	0.53	0.45	0.54	0.05	
2 / A		1	2	3	4	5	Avg.	St. Dev	
		1.00	1.10	1.06	1.26	1.16			
		6	7	8	9	10			
		1.22	0.94	0.96	0.83	1.16	1.07	0.14	
3 / A		1	2	3	4	5	Avg.	St. Dev	
		0.19	1.23	1.34	0.95	1.12			
		6	7	8	9	10			
		0.92	0.82	0.88	0.80	1.32	1.05	0.20	
4 / A		1	2	3	4	5	Avg.	St. Dev	
		0.40	0.35	0.45	0.41	0.55			
		6	7	8	9	10			
		0.41	0.41	0.47	0.52	0.40	0.44	0.06	

Notes: None

## 2368T0001

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FRSA  
 ASTM D1876 and TAS 117 (B) for  
 30# anchor sheets and sa underlayments  
 Page 3 of 3

TAS 117 (B) Fastener Pull-Through Resistance

Sample	Test Method	Results Maximum Load (lbf)									
Fastener Pull-Through Resistance (lbf) 14 specimens; 18" by 18"; Test Rate @ 2in/min	TAS 117 Appendix B										
A		1	2	3	4	5	6	7	Avg.	St. Dev	
		61.7	59.0	64.7	64.4	64.3	55.5	56.4			
		8	9	10	11	12	13	14			
		62.4	66.8	61.1	56.3	56.2	57.8	60.5			60.5
B		1	2	3	4	5	6	7	Avg.	St. Dev	
		41.0	51.0	56.0	49.1	49.6	46.8	53.7			
		8	9	10	11	12	13	14			
		40.9	52.6	36.2	44.8	44.5	45.9	44.7			46.9
C		1	2	3	4	5	6	7	Avg.	St. Dev	
		42.4	41.2	52.0	48.0	45.8	52.5	48.4			
		8	9	10	11	12	13	14			
		49.3	47.6	52.0	43.2	44.7	50.2	44.3			47.2
D		1	2	3	4	5	6	7	Avg.	St. Dev	
		81.9	84.9	91.9	86.8	83.9	83.7	80.9			
		8	9	10	11	12	13	14			
		82.9	78.6	83.5	82.4	89.7	86.8	83.9			84.4

Notes: None

## 2368T0001

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# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R10046**

23

Date Submitted	02/01/2022	Section	1510	Proponent	Michael Silvers (FRSA)
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Requires minimum clearance between the underside of the roof deck and lines, pipes, conduit and cables.

### Rationale

Most mechanically attached roof coverings require fasteners and to penetrate the roof deck. When lines, pipes conduit and cables are ran too close to the roof deck and are penetrated by a fastener during roof installation it can create dangerous conditions and/or cause damage to property. The presence of electrical wiring and cables, potable water, wastewater, fire sprinkler, gas and refrigerant pipes ran against or too close to the underside of a deck can each cause serious issues during roof installation.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

**1510.12 Lines, pipes, conduit and cables under roof decks**

Lines, pipes, conduit and cables installed below the roof deck shall have a minimum clearance of 1-1/2" from the lowest surface of the roof deck except where they penetrate the roof deck.

Exclusion: Lines, pipes, conduit and cables installed under structural concrete decks.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R10071**

24

Date Submitted	02/03/2022	Section	1507.1.1	Proponent	Michael Silvers (FRSA)
Chapter	15	Affects HVHZ	No	Attachments	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language Yes**

### Related Modifications

Residential Chapter 9 Section R905 Requirements for Roof Coverings R905.1.1 Underlayment

### Summary of Modification

Reduces repetitive language by combining several similar methods of application into one description. The actual methods of installation remain unchanged except the additional overlap required beyond half the width of full sheets to 2". (See a completed version of the section attached).

### Rationale

This section underwent numerous amendments during the last code cycle leaving it overly complex. The modification reduces repetitive and redundant language in this section by combining several similar methods of application into one description. The actual methods of installation remain unchanged except to change all additional overlap required beyond half the width of full sheets to 2". This change will highlight the similarities of underlayment requirements for most steep slope roof coverings while clarifying the few differences.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.



## Alternate Language

### 1st Comment Period History

310071-A1	<b>Proponent</b>	Greg Keeler	<b>Submitted</b>	4/16/2022 9:52:04 PM	<b>Attachments</b>	Yes
	Rationale: This modification will provide clarity due to varying widths of synthetic underlayment. This modification has been discussed with the proponent.					

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None

**Impact to building and property owners relative to cost of compliance with code**

None

**Impact to industry relative to the cost of compliance with code**

None

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate

**Does not degrade the effectiveness of the code**

Does not degrade

## 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, ~~or and~~ ASTM 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, 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 shingles, metal roof panels or shingles, mineral surfaced roll roofing, slate and slate-type shingles, wood shakes, wood shingles

Underlayment for asphalt shingles, metal roof panels or shingles, mineral surfaced roll roofing, slate and slate-type shingles, wood shakes, 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, re-nailing 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 3-3/4-inch-wide (102 96 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 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 underlayment,

overlapping successive sheets half the width of a full sheet plus 2 inches. 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,  $V_{ult}$ , 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 3/4 inch (19.05mm) into the roof sheathing.

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 D 6757 <u>ASTM D8257</u>	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. <del>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.</del> 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 o.c.
Metal Roof Shingles, Mineral-Surface Roll Roofing, Slate and Slate-type Shingles, Wood Shingles, Wood Shake	ASTM D226 Type II ASTM D4869 Type III or IV <u>ASTM D8257</u>		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 $\frac{3}{4}$ inch into the roof sheathing.
--	--	--	--

hour = 0.447 m/s

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

## 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 ~~and~~ ASTM 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, 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 shingles, metal roof panels or shingles, mineral surfaced roll roofing, slate and slate-type shingles, wood shakes, wood shingles

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

#### 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, reroofing 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 ~~4-3/4~~ 4-3/4 -inch-wide (~~402~~ 96 mm) strip of self-adhering polymer-modified bitumen membrane complying with ASTM D1970 or 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-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 3. Two layers of ASTM D226 Type II or ASTM D4869 Type III ~~or~~ Type IV, or ASTM D8257 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, Vult, 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.

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 2" 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 ~~u~~ 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 ~~u~~ 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. 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	
		Roof Slope 2:12 and Less Than 4:12	Roof Slope 4:12 and Greater
Asphalt Shingles, Metal Roof Panels, Photovoltaic Shingles	ASTM D226Type II ASTM D4869Type III or IV  ASTM D 675	Apply in accordance with Section 1507.1.1.1, Item 4 <del>3</del> or Section <del>1507.1.1.3, Item 3</del> 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 $\frac{3}{4}$ inch into the roof sheathing.
Metal Roof Shingles, Mineral-Surface Roll Roofing, Slate and Slate-type Shingles, Wood Shingles, Wood Shake	ASTM D226Type II ASTM D4869 Type III or IV		

## 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 3/4 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, Vult, 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.



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R10115

25

Date Submitted	02/15/2022	Section	1510.8	Proponent	Amanda Hickman
Chapter	15	Affects HVHZ	No	Attachments	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language Yes

### Related Modifications

### Summary of Modification

Lightning protection systems

### Rationale

NFPA 780 and UL 96A are currently silent on the impact the attachment of LPS have on the roof. In order to preserve the building envelope in a wind or weather event, it is critical to maintain the integrity of the roof components which are required by code to be tested and to ensure weatherproofing continuity. Even in moderate wind events, there have been documented failures of code compliant and tested roof assembly components where LPS were attached. Roof assembly components such as coping and gutters are required by code to be tested to specific wind loads. LPS attachments to these roof component systems not only alter the wind load on of these tested components, but also alter their performance by restricting thermal movement causing galvanic reaction, leak point, etc. This modification clarifies that attachment of LPS to any part of the roof needs to be done in accordance with the installation instructions for the roof assembly, roof covering, metal edge systems, or gutter. Where LPS components attach to or penetrate the roof, they must be properly flashed. Reasonable and readily available methods and details exist to attach LPS systems independent of coping, fascia, gutter and roof assembly components and for flashing of existing LPS attachment methods where penetrations are required. This proposal clarifies that regardless of sequencing challenges which may exist in new or retrofit applications of LPS, the integrity of tested components and the envelope shall be maintained.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

This modification will improve enforcement of code by clarifying that attachment of LPS to the roof needs to be done in accordance with the installation instructions.

#### Impact to building and property owners relative to cost of compliance with code

No impact to cost of compliance with code. This proposal just clarifies that LPS must be installed in accordance with the roofing component manufacturer's installation instructions. Flashing is already required for penetrations.

There will, however, be a reduction in failure costs.

#### Impact to industry relative to the cost of compliance with code

No impact to cost of compliance with code. This proposal just clarifies that LPS must be installed in accordance with the roofing component manufacturer's installation instructions. Flashing is already required for penetrations. There will, however, be a reduction in failure costs.

**Impact to small business relative to the cost of compliance with code**

## **Requirements**

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

This modification clarifies that the integrity of tested components and the envelope shall be maintained, which will improve the safety and welfare of the general public.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

This modification strengthens the code by maintaining the integrity of the roof components which are required by code to be tested and to ensure weatherproofing continuity.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

This modification does not discriminate against other materials or products as it just clarifies that LPS must be installed in accordance with the roofing component manufacturer's installation instructions.

**Does not degrade the effectiveness of the code**

This modification will strengthen the effectiveness of the code by providing clarity on lightning protection systems.

## Alternate Language

### 1st Comment Period History

10115-A3	<b>Proponent</b>	Michael Silvers (FRSA)	<b>Submitted</b>	4/15/2022 9:44:45 AM	<b>Attachments</b>	Yes
	<b>Rationale:</b> The recommended additional language clarifies that this section does not add to the code's requirements as to when or where lightning protection is required.					

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact

#### Impact to building and property owners relative to cost of compliance with code

No impact

#### Impact to industry relative to the cost of compliance with code

No impact

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves the code

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate

#### Does not degrade the effectiveness of the code

Does not degrade

### 1st Comment Period History

10115-A2	<b>Proponent</b>	Amanda Hickman	<b>Submitted</b>	4/11/2022 10:49:51 AM	<b>Attachments</b>	Yes
	<b>Rationale:</b> This comment clarifies that lightning protection is not mandatory and also updates the referenced sections to the correct section in the Florida Building Code.					

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

None, just clarifies language and updates section numbers.

#### Impact to building and property owners relative to cost of compliance with code

None, just clarifies language and updates section numbers.

#### Impact to industry relative to the cost of compliance with code

None, just clarifies language and updates section numbers.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, clarifies language and updates section numbers.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes, clarifies language and updates section numbers.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

No, only clarifies language and updates section numbers.

**Does not degrade the effectiveness of the code**

No, only clarifies language and updates section numbers.

**1510.8.6 Lightning Protection Systems.** Where lightning protection system are required by this code, the components shall be installed in accordance (remainder of the modification remains unchanged)

**1510.8.6 Lightning Protection Systems.** When installed, lightning protection system components shall be installed in accordance with Section 1510.8.6.1. Lightning protection systems shall not be attached directly to metal edge systems, including gutters, where these roof assembly components are required to be tested to ANSI/SPRI/FM ES- 1/4435 or ANSI/SPRI GT-1 in accordance with Sections ~~1504.6~~ 1504.5 or ~~1504.6.1~~ 1504.5.1.

Exception: Where permitted by the manufacturer's installation instructions for the metal edge systems or gutters.

**Revise as follows:**

**[BG]1510.8 Other rooftop structures.** Rooftop structures not regulated by Sections 1510.2 through 1510.7 shall comply with Sections 1510.8.1 through 1510.8.56, as applicable.

**Add new text as follows:**

**1510.8.6 Lightning Protection Systems.** Lightning protection system components shall be installed in accordance with Section 1510.8.6.1. Lightning protection systems shall not be attached directly to metal edge systems, including gutters, where these roof assembly components are required to be tested to ANSI/SPRI/FM ES-1/4435 or ANSI/SPRI GT-1 in accordance with Sections 1504.6 or 1504.6.1.

Exception:

Where permitted by the manufacturer's installation instructions for the metal edge systems or gutters.

**1510.8.6.1 Installation.** Lightning protection system components directly attached to or through the roof covering shall be installed in accordance with this chapter and the roof covering manufacturer's installation instructions. Flashing shall be installed in accordance with the roof assembly manufacturer's installation instructions and Sections 1503.2 and 1507 where the lightning protection system installation results in a penetration through the roof plane.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R10117

26

Date Submitted	02/15/2022	Section	1503.3	Proponent	Amanda Hickman
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

None

### Summary of Modification

Coping / Parapet walls

### Rationale

The current language in this section is in dire need of an update, as it does not address current technologies or practices. This language is a carry-over from the legacy code and was meant to apply to the coping of masonry parapet walls. Depending on the type of roofing system that is being used, traditional metal or masonry copings are not always used to cap or cover a parapet wall. This proposal provides the much-needed clarity as to when and how parapet walls are to be properly coped or covered. This revision will provide additional options for maintaining a continuous air barrier. For example, the roof membrane could be used to wrap the top of the parapet wall and extend down the exterior side of the wall. The membrane could then be tied into the wall air barrier system.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

This will improve enforcement of the code by addressing current technologies and practices.

#### Impact to building and property owners relative to cost of compliance with code

No impact to cost as no additional materials or detailing will be required based on this modification.

#### Impact to industry relative to the cost of compliance with code

No impact to cost as no additional materials or detailing will be required based on this modification.

#### Impact to small business relative to the cost of compliance with code

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Will improve the safety of the general public by addressing current technologies and practices.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**



This modification improves the code by updating the language to coincide with current technologies and practices.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Will not discriminate as no additional materials or detailing will be required based on this modification.

**Does not degrade the effectiveness of the code**

Will improve the effectiveness of the code by addressing current technologies and practices.

**Revise as follows:**

**1503.3 Coping.** Parapet walls shall be properly sealed ~~coped with noncombustible~~, weatherproof materials. When coping is used, it shall be of noncombustible materials of a width no less than the thickness of the parapet wall.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R10118

27

Date Submitted	02/15/2022	Section	1504.5	Proponent	Amanda Hickman
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

none

### Summary of Modification

Edge systems for low-slope roofs

### Rationale

This proposal clarifies that the edge metal systems need to be properly tested to the appropriate standard regardless if the roof membrane is either independently or dependently terminated. Metal edge systems prevent water infiltration, and in many cases to also secure the roof membrane. Loss of the edge system or components of the edge system during a high wind event could allow for water infiltration even if the roof membrane remains secure. Furthermore, any component of the edge system that becomes disengaged during a high wind event will become a projectile that can damage the roof membrane and other building components (windows, doors, walls, etc.), and possibly injure people. Therefore, metal edge systems should be tested per ES-1 whether they secure the membrane or not.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

Improves enforcement of the code by clarifying that the edge metal systems need to be properly tested.

#### Impact to building and property owners relative to cost of compliance with code

No impact to cost, as this modification only clarifies that this test applies to edge metal regardless of installation method.

#### Impact to industry relative to the cost of compliance with code

No impact to cost, as this modification only clarifies that this test applies to edge metal regardless of installation method.

#### Impact to small business relative to the cost of compliance with code

### Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Will improve the safety and welfare of the general public by ensuring metal edge systems are tested per ES-1 whether they secure the membrane or not.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

This modification will strengthen the code by ensuring edge metal systems are properly tested.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

This modification will not discriminate, as it only clarifies that this test applies to edge metal regardless of installation method.

**Does not degrade the effectiveness of the code**

This modification will improve the effectiveness of the code by clarifying existing language.

**Revise as follows:**

**1504.5 Edge securement systems for low-slope roofs.** ~~Low-slope Metal edge systems, except gutters, installed on built-up, modified bitumen and single-ply roof system metal edge securement, except gutters, systems having a slope less than 2:12,~~ shall be designed and installed for wind loads in accordance with Chapter 16 and tested for resistance in accordance with Test Methods RE-1, RE-2 and RE-3 of ANSI/SPRI ES-1, or RAS 111 except  $V_{ult}$  wind speed shall be determined from Figure 1609.3(1), 1609.3(2), 1609.3(3) or 1609.3(4) as applicable.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R10121

28

Date Submitted	02/15/2022	Section	1504.4	Proponent	Amanda Hickman
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

none

### Summary of Modification

ballasted low-slope roof systems

### Rationale

This proposal makes a much-needed correction to section 1504.4 for ballasted roof systems for low-slope single-ply roofs. This proposal revises Section 1504.4 so that ballasted roofs comply with ANSI/SPRI RP-4 and not 1504.8. The requirements in RP-4 were developed for the appropriate application, installation and to prevent ballast scour for this specific type of single-ply ballasted system. The scour wind speed is below that at which blowoff would occur. It also provides design options for various conditions.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

This modification will improve enforcement of code by clarifying what design requirements are to be used for ballasted single-ply roof systems.

#### Impact to building and property owners relative to cost of compliance with code

No impact to cost, as this modification only clarifies design requirements.

#### Impact to industry relative to the cost of compliance with code

No impact to cost, as this modification only clarifies design requirements.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

The requirements in RP-4 were developed for the appropriate application, installation and to prevent ballast scour for this specific type of single-ply ballasted system.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves the code by clarifying what design requirements are to be used for ballasted single-ply roof systems.  
**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate, it only corrects section 1504.4 for ballasted roof systems on low-slope single-ply roofs.

**Does not degrade the effectiveness of the code**

This modification will improve effectiveness of the code by clarifying what design requirements are to be used for ballasted single-ply roof systems.

**Revise as follows:**

**1504.4 Ballasted low-slope single-ply roof systems.** Ballasted low-slope (roof slope < 2:12) single-ply roof system coverings installed in accordance with Sections 1507.12 and 1507.13 shall be designed in accordance with ~~Section 1504.8~~ and ANSI/SPRI RP-4.



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R10134**

29

Date Submitted	02/09/2022	Section	1502	Proponent	Gaspar Rodriguez
Chapter	15	Affects HVHZ	Yes	Attachments	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language Yes**

### Related Modifications

Chapter 2 Definitions has the same definition.

### Summary of Modification

Replace the word additional with sufficient. The basic premise of positive drainage, is that the roof drain within 48 hours of precipitation. Additional slope is not always needed, however, sufficient is always required.

### Rationale

The mod makes clear that additional slope may not be required, but sufficient slope must be provided.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None.

**Impact to building and property owners relative to cost of compliance with code**

None.

**Impact to industry relative to the cost of compliance with code**

None.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Makes the code easier to understand.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Makes the code easier to understand.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**  
Makes the code easier to understand.

## Alternate Language

### 1st Comment Period History

R10134-A1	<b>Proponent</b>	Michael Silvers (FRSA)	<b>Submitted</b>	4/5/2022 5:13:51 PM	<b>Attachments</b>	Yes
	Rationale: Should be consistent everywhere the definition is used in the code					

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact.

#### Impact to building and property owners relative to cost of compliance with code

No impact.

#### Impact to industry relative to the cost of compliance with code

No impact.

#### Impact to small business relative to the cost of compliance with code

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**  
Improve the code.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**  
Does not discriminate.

**Does not degrade the effectiveness of the code**  
Does not discriminate.

"Chapter 2 Definitions has the same definition" also:

Residential Code Chapter 2 Section R202 Definitions contains the same definition

Existing Building Chapter 2 Section 202 Definitions contains the same definition

FRSA can strongly support this clarifying code language, but it should be consistent everywhere the definition is used in the code.

**POSITIVE ROOF DRAINAGE.** The drainage condition in which consideration has been made for all loading deflections of the roof deck, and ~~additional~~ sufficient slope has been provided to ensure drainage of the roof within 48 hours of precipitation.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## **Sub Code: Building**

**R10142**

30

Date Submitted	02/10/2022	Section	1518.2	Proponent	Greg Keeler
Chapter	15	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### **Related Modifications**

1518.4

### **Summary of Modification**

This modification revises the language related to underlayment fastening so it correlates with the introduction of ASTM D8257 synthetic underlayments and provides flexibility due to various product widths.

### **Rationale**

This modification revises the language related to underlayment fastening so it correlates with the introduction of ASTM D8257 synthetic underlayments and provides flexibility due to various product widths.

### **Fiscal Impact Statement**

#### **Impact to local entity relative to enforcement of code**

This modification will provide necessary clarity for fastening of underlayment products with varying widths.

#### **Impact to building and property owners relative to cost of compliance with code**

No impact

#### **Impact to industry relative to the cost of compliance with code**

No impact

#### **Impact to small business relative to the cost of compliance with code**

### **Requirements**

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Yes

**Does not degrade the effectiveness of the code**  
Yes

**1518.2 Underlayments.** Underlayment shall be as defined in Section 1513. Underlayment shall be installed in compliance with the roofing component product approval and shall be in compliance with the following minimum requirements:

**1518.2.1** Underlayment shall be attached to a nailable deck in a grid pattern of maximum 12 inches (305 mm) ~~between the overlaps horizontally and vertically~~, with 6-inch (152mm) spacing at the overlaps.

**1518.2.2** Where the architectural appearance of the under-side is to be preserved, the underlayment shall be secured in accordance with Section 1519.5.2.

**1518.2.3** Tin caps and nails or cap nails shall be as defined in Section 1517.5.2.

**1518.2.4** Underlayment nails shall be as defined in Section 1517.5.1.



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R10143**

31

Date Submitted	02/10/2022	Section	1518.4	Proponent	Greg Keeler
Chapter	15	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

1518.2, RAS 115, RAS 130, TAS 110, Chapter 35

### Summary of Modification

This modification introduces ASTM D8257, the first consensus Standard related exclusively to synthetic underlayments. It also revises the language related to underlayment fastening.

### Rationale

This modification introduces ASTM D8257, the first consensus Standard related exclusively to synthetic underlayments. It also revises the language related to underlayment fastening.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

This modification will provide necessary clarity for qualification of synthetic underlayments and fastening of underlayment products with varying widths.

#### Impact to building and property owners relative to cost of compliance with code

No impact

#### Impact to industry relative to the cost of compliance with code

No impact

#### Impact to small business relative to the cost of compliance with code

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Yes

**Does not degrade the effectiveness of the code**

Yes

**1518.4** All underlayment applications for prepared roof coverings shall be applied in compliance with the manufacturer roofing assembly product approval, and shall be not less than one of the following: (1) a double layer of an ASTM D226 Type I, with a 19-inch (483 mm) headlap; or (2) a single layer of an ASTM D226, Type II with a 4-inch (102 mm) headlap; or (3) a single layer of an ASTM D2626 coated base sheet with a 4-inch (102 mm) headlap, or (4) a single layer of an ASTM D8257 underlayment with a 4-inch (102 mm) headlap and (4) all end laps shall be a minimum of 6 inches (152 mm).

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R10176**

32

Date Submitted	02/14/2022	Section	1518	Proponent	Michael Silvers (FRSA)
Chapter	15	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

10175, 10179, 10180 and 10238

### Summary of Modification

This modification will align HVHZ roof underlayment requirements with the more stringent secondary water barrier requirements used in the rest of Florida and will also allow the use of self-adhering membrane applied direct to deck in the HVHZ.

### Rationale

This modification will align HVHZ roof underlayment requirements with the more stringent secondary water barrier requirements used in the rest of Florida and will also allow the use of self-adhering membrane applied direct to deck in the HVHZ. Self-adhering underlayments have been accepted outside the HVHZ for well over a decade. They have proven to be the most effective secondary water barrier (SWB) capable of helping building owners and occupants to utilize their structures after hurricanes. Their proven resistance to wind uplift and wind driven rain makes them an excellent SWB. They have also shown to be an important part of the load path when used as a tile underlayment. These underlayments currently offer the highest resistance to uplift available when used as the tile underlayment in adhered tile systems. This is an important consideration with the higher design wind speeds in the HVHZ. Language was previously added to the code that describes how future roof systems can be installed when a self-adhering underlayment has been previously installed as part of a roof system. Their use has been widely accepted and eventually embraced by Florida's roofing industry for good reason. The building owners and citizens residing in the HVHZ deserve this option.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

## **Requirements**

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not discriminate.

**1518.1 General.**

~~Prepared roof coverings shall be as defined in Section 1513 and in general limited to application over sloped roof decks capable of receiving mechanical fasteners. Prepared roof coverings may be mechanically fastened or, in specific limited cases when noted in the product approval, set in with an adhesive bond.~~

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

-

**1518.2 Underlayments.**

~~Underlayment shall be as defined in Section 1513. Underlayment shall be installed in compliance with the roofing component product approval and shall be in compliance with the following minimum requirements:~~

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 ASTM 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 1518.1, 1518.2, 1518.5, 1518.6, 1518.7, 1518.8, 1518.9, 1518.10, or 1518.11 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.

-

**1518.2.1**

~~Underlayment described in 1518.4 (1), (2) and (3) shall be attached to a nailable deck in a grid pattern of 12 inches (305 mm) between the overlaps, with 6 inch (152 mm) spacing at the overlaps.~~

**Underlayment for asphalt shingles, metal roof panels or shingles, mineral surfaced roll roofing, slate and slate-type shingles:**

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

**Exception:**

1. An existing self-adhering modified bitumen underlayment that has been previously installed over the roof decking and, where it is required, reroofing 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 3-3/4 -inch-wide (102 96 mm) strip of selfadhering polymer-modified bitumen membrane complying with ASTM D1970 or 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 1518.2.1 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 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 underlayment, overlapping successive sheets half the width of a full sheet plus 2 inches. 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 3/4 inch (19.05 mm) into the roof sheathing.

TABLE 1518.2.1 UNDERLAYMENT WITH SELF-ADHERING STRIPS OVER ROOF DECKING JOINTS

<u>Roof Covering</u>	<u>Underlayment Type</u>	<u>Underlayment Attachment</u>	
		<u>Roof Slope 2:12 and Less Than 4:12</u>	<u>Roof Slope 4:12 and Greater</u>
<u>Asphalt Shingles, Metal Roof Panels, Photovoltaic Shingles</u>	<u>ASTM D226Type II</u> <u>ASTM D4869Type III or IV</u>  <u>ASTM D 675</u>	<u>Apply in accordance with Section 1518.2.1, Item 3</u>	<u>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. Underlayments shall be fastened with approved minimum 12 gage by 1 1/4 in. corrosion-resistant annular ring shank roofing nails fastened through minimum 32 gage by 15/8 in. diameter approved tin caps.</u>
<u>Metal Roof Shingles, Mineral-Surface Roll Roofing, Slate and Slate-type Shingles, Wood Shingles, Wood Shake</u>	<u>ASTM D226Type II</u> <u>ASTM D4869 Type III or IV</u>		<u>Underlayment shall be attached to a nailable deck in a grid pattern of 12 inches (305 mm) between the overlaps, with 6-inch (152 mm) spacing at the overlaps. Nails shall be of sufficient length to penetrate through the sheathing or wood plank a minimum of 3/16 in. or penetrate 1 inch (25 mm) or greater thickness of lumber a minimum</u>

			of 1 in., except where architectural appearance is to be preserved, in which case a minimum of 3/4 in. nail may be used.
--	--	--	--

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

### 1518.2.2

Where the architectural appearance of the underside is to be preserved, the underlayment shall be secured in accordance with Section 1519.5.2.

### 1518.2.3

Tin caps and nails or cap nails shall be as defined in Section 1517.5.2.

### 1518.2.4

Underlayment nails shall be as defined in Section 1517.5.1.

### 1518.3 Reserved.

~~If the underlayment is a self-adhering membrane, the membrane shall be applied over a mechanically attached anchor sheet, attached in compliance with Section 1518.2.1.~~

### 1518.4 Reserved

~~All underlayment applications for prepared roof coverings shall be applied in compliance with the manufacturer roofing assembly product approval, and shall be not less than one of the following:-~~

~~(1) a double layer of an ASTM D226 Type I II, with a 19-inch (483 mm) headlap; or~~

~~(2) a single layer of an ASTM D226, Type II with a 4-inch (102 mm) headlap; or~~

~~(3) a single layer of an ASTM D2626 coated base sheet with a 4-inch (102 mm) headlap;~~

~~and (4 6) all endlaps shall be a minimum of 6 inches (152 mm).~~

### 1518.8 Clay and concrete roof tile.

Tile shall be clay, concrete or composition material of various configurations complying with the physical property requirements of this code. All tile and tile systems shall be tested in compliance with the provisions set forth in Section 1523. ~~Tile shall have a product approval for a complete tile system, which shall include the tile, underlayment and all tile related accessories required to provide a waterproof system.~~

*Note: Remaining sections remain unchanged.*



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R10269

33

Date Submitted	02/12/2022	Section	1515.2	Proponent	Gaspar Rodriguez
Chapter	15	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

On Table 1515.2 Note 1, replace outdated FM 4471 with current TAS 114.

### Rationale

TAS 114, Appendix G, is equivalent to FM 4471 and should remain as an alternate test standard.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None.

**Impact to building and property owners relative to cost of compliance with code**

None.

**Impact to industry relative to the cost of compliance with code**

Allows manufacturers to continue to use testing which has been performed recently.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes, maintains testing standard.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Maintains current standards.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

**Note 1, below Table 1515.2**

1. Standing seam metal roof panel systems that pass the requirements of the Static Water Leakage Test criteria of ~~FM 4474~~ TAS 114, Appendix G or ASTM E2140 shall be permitted to be installed to a minimum slope of 1:12.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## **Sub Code: Building**

**R10271**

34

Date Submitted	02/12/2022	Section	1523.6.5.2.4.1.1	Proponent	Gaspar Rodriguez
Chapter	15	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### **Related Modifications**

### **Summary of Modification**

Replace FM 4471 with TAS 114 as an alternate test standard.

### **Rationale**

FM 4471 has been discontinued by FM, however, TAS 114 has always been an alternative FM 4471.

### **Fiscal Impact Statement**

**Impact to local entity relative to enforcement of code**

None.

**Impact to building and property owners relative to cost of compliance with code**

None.

**Impact to industry relative to the cost of compliance with code**

Allows manufacturers to continue to use recently performed FM 4471 test.

**Impact to small business relative to the cost of compliance with code**

### **Requirements**

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Maintains current code.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Maintains current code.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Maintains current code.

**1523.6.5.2.4.1.1** Standing seam metal roof panel systems that pass the requirements of the Static Water Leakage Test criteria of FM 4471 TAS 114, Appendix G or ASTM E2140 shall be permitted to be installed to a minimum slope of 1:12.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## **Sub Code: Building**

**R10474**

35

Date Submitted	02/15/2022	Section	1508.2	Proponent	Greg Keeler
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### **Related Modifications**

### **Summary of Modification**

Adds ASTM C1902 to Table 1508.2 "Material Standards for Roof Insulation".

### **Rationale**

Today, the scope of ASTM C552, "Standard Specification for Cellular Glass Thermal Insulation", encompasses applications where the cellular glass is intended to be used on surfaces that operate between -450 F and 800 F. While useful in industrial and pipe applications, this temperature range is much broader than needed for typical building material applications and limits the flexibility in the manufacturing operation to modify the formulation or process to tailor the properties to the needs of the building materials market. Therefore, the new material specification of ASTM C1902, "Standard Specification for Cellular Glass Insulation Used in Building and Roof Applications", is being proposed that is better aligned to service the building materials market. This specification would be differentiated from the existing ASTM C552 specification in the following ways: 1. Narrow the scope of the service temperature range to that of typical building applications a. From the industrial temperature of -450 F to 800 F to the building temperature range of -50 F to 200 F 2. Remove properties that are not pertinent to the building materials market a. Hot-surface performance warpage – This test refers primarily to high-temperature insulations that are applicable to hot-side temperatures as high as 800°F to determine material warpage or cracking and is not relevant to buildings. b. Stress corrosion – This test is for insulation in contact with austenitic stainless-steel piping to assess corrosion of a stressed component and is not relevant to buildings. 3. Add properties that are pertinent to the building materials market a. Dimensional stability – This is a measurement of a material's change in dimensions in response to various environmental exposure conditions, which can be important to building systems.

### **Fiscal Impact Statement**

**Impact to local entity relative to enforcement of code**

None

**Impact to building and property owners relative to cost of compliance with code**

None

**Impact to industry relative to the cost of compliance with code**

None

**Impact to small business relative to the cost of compliance with code**

## **Requirements**

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate

**Does not degrade the effectiveness of the code**

Does not degrade

**1508.2 Material standards.**

Above-deck thermal insulation board shall comply with the standards in Table 1508.2.

**TABLE 1508.2****MATERIAL STANDARDS FOR ROOF INSULATION**

Cellular glass board	ASTM C552 or ASTM C1902
Composite boards	ASTM C1289, Type III, IV, V or VII
Expanded polystyrene	ASTM C578
Extruded polystyrene	ASTM C578
Fiber-reinforced gypsum board	ASTM C1278
Glass-faced gypsum board	ASTM C1177
High-density polyisocyanurate board	ASTM C1289, Type II, Class 4
Mineral fiber insulation board	ASTM C726
Perlite board	ASTM C728
Polyisocyanurate board	ASTM C1289, Type I or II
Wood fiberboard	ASTM C208, Type II

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R10514

36

Date Submitted	02/15/2022	Section	1507.15	Proponent	Chadwick Collins
Chapter	15	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Add clarifying language for guidance related to application and flashings

### Rationale

This proposal is an effort to match this section to other material sections in 1507 that address application and flashing and to provide guidance to manufacturer's installation instructions

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

With the language referencing manufacturer's installation instructions, this proposal will provide documents to assess installations against prescribed directions published by the individual manufacturers.

#### Impact to building and property owners relative to cost of compliance with code

Building & property owners will be assured that the manufacturer and code requirements will be mutually congruent with the installation of products.

#### Impact to industry relative to the cost of compliance with code

Industry stakeholders will be able to emphasize the importance of using their published instructions for proper installation to be in compliance with the code.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Referencing manufacturer's instructions include published SDS, which have required safety when interacting the product.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Pointing to the manufacturer's instructions intends to ensure proper installation of the product to function as designed



**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

By referencing the individual manufacturer's instructions, each manufacturer's product is allowed its optimize installation configuration

**Does not degrade the effectiveness of the code**

While this language clarifies about installation and flashings, it does not change the existing requirements in the code for this material

1507.15.3 Application. Liquid-applied roofing shall be installed in accordance with the approved manufacturer's installation instructions.

1507.15.4 Flashings. Flashing shall be applied in accordance with 1507.15 and the liquid-applied roofing manufacturer's installation instructions.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R9895**

37

Date Submitted	01/12/2022	Section	1609	Proponent	Aaron Phillips
Chapter	16	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Make asphalt shingle reference a subsection.

### Rationale

A subsection is inserted into Section 1609.5.2 to clearly separate the provisions for asphalt shingles, which point to Section 1504.2, from the Exception that addresses rigid tile roof coverings, which points to 1609.5.3. Doing so removes the opportunity for misinterpretation of the requirements for asphalt shingles.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact on local entity enforcement.

#### Impact to building and property owners relative to cost of compliance with code

No cost impact because the MOD clarifies existing provisions.

#### Impact to industry relative to the cost of compliance with code

No cost impact because the MOD clarifies existing provisions.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Reduces ambiguity and possible misinterpretation of existing wind resistance provisions to ensure proper implementation.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Reduces ambiguity and possible misinterpretation of existing provisions.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

**Does not degrade the effectiveness of the code**

Improves effectiveness of code by reducing ambiguity.

**Revise as shown:**

**1609.5 Roof systems.** Roof systems shall be designed and constructed in accordance with sections 1609.5.1 through 1609.5.3, as applicable.

**1609.5.1 Roof deck.** The roof deck shall be designed to withstand the wind pressures determined in accordance with ASCE 7.

**1609.5.2 Roof coverings.** Roof coverings shall comply with Section 1609.5.1.

**Exception:** Rigid tile roof coverings that are air permeable and installed over a roof deck complying with Section 1609.5.1 are permitted to be designed in accordance with Section 1609.5.3.

**1609.5.2.1 Asphalt Shingles.** Asphalt shingles installed over a roof deck complying with Section 1609.5.1 shall comply with the wind-resistance requirements of Section 1504.1.1.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R9950**

38

Date Submitted	01/24/2022	Section	35	Proponent	Michael Silvers (FRSA)
Chapter	35	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

Building Section 1507.3 Residential Section 905.3 Residential Chapter 46

### Summary of Modification

This modification updates Referenced Standard FRSA/TRI High Wind Concrete and Clay Roof Tile Manual from the Sixth to the Seventh Edition.

### Rationale

This modification updates Referenced Standard FRSA/TRI High Wind Concrete and Clay Roof Tile Manual from the Sixth to the Seventh Edition. The manual is being updated to comply with ASCE 7-22

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

FRSA

Florida Roofing and Sheet Metal ~~and Air Conditioning~~ Contractors Association.

P.O. Box 4850

Winter Park, FL32793

FRSA/TRI Alliance

Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition ~~Revised~~

~~September~~ December 2018 23 (09 12—18 22)

1507.3.2, 1507.3.3, 1507.3.3.1, 1507.3.7, 1507.3.8, 1507.3.9



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R10119

39

Date Submitted	02/15/2022	Section	1	Proponent	Amanda Hickman
Chapter	35	Affects HVHZ	No	Attachments	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

nom

### Summary of Modification

ANSI/SPRI/FM4435-ES-1 update

### Rationale

This modification updates Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems standard to the current version.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

This modification will improve enforcement of the code by updating the reference standard to the current version.

#### Impact to building and property owners relative to cost of compliance with code

No impact to cost, as this only updates the standard to the current version.

#### Impact to industry relative to the cost of compliance with code

No impact to cost, as this only updates the standard to the current version.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This modification will improve welfare of general public by updating the standard to the current version.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This modification strengthens the code by updating the standard to the current version.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate, as this modification only updates the standard to the current version.

**Does not degrade the effectiveness of the code**

Improves effectiveness of the code by updating the standard to the current version.

**Revise reference standard as follows:**

ANSI/SPRI/FM4435-ES-1—~~11~~17

Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems



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ANSI/SPRI/FM 4435/ES-1 2017

## Test Standard for Edge Systems Used with Low Slope Roofing Systems

Approved January 24, 2017

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#### Disclaimer

This standard is for use by architects, engineers, roofing contractors, manufacturers, testing agencies, and owners of low slope roofing systems. SPRI, its members and employees do not warrant that this standards is proper and applicable under all conditions.

ANSI/SPRI/FM 4435/ES-1 2017  
 Test Standard for Edge  
 Systems Used with Low  
 Slope Roofing Systems

Approved  
 January 24, 2017

## 1.0 Introduction

### 1.1 Scope

This Standard provides the basic requirements only for resistance testing for *roof edge systems* under simulated *wind load* conditions. This Standard is intended for use by those that design, specify, manufacturer, and test roofing materials and *roof edge systems* used in the roofing industry.

This Standard applies to low slope roof systems, with low slope defined here as roofs having a slope  $\leq 9.5$  degrees (2:12). The test methods found in this document address *copings* and *roof edge systems*.

### 1.2 Definitions

All words defined within this section are *italicized* throughout the standard.

#### ANSI

American National Standards Institute

#### Ballast

An anchoring material, such as aggregate or precast concrete pavers, which employs its mass and the force of gravity to hold (or assist in holding) single-ply roof *membranes* in place.

#### Cleat

A continuous *metal* strip, or angled piece, used to secure *metal* components.

#### Clip

A non-continuous *metal* component or angle piece used to secure two or more *metal* components together.

#### Coping

The covering piece on top of a *parapet wall* exposed to the weather, usually made of *metal*, and sloped to carry off water.

#### Deck

The uppermost structural component of the building immediately below the *roof system*. The *deck* must be capable of safely supporting the weight of the *roof system*, and the loads required by the governing building codes.

#### Design load

The total load on a structural system for the most severe combination of loads and forces which it is designed to sustain.

#### Drip edge

A *metal* flashing or other overhanging component with an outward projecting lower edge, intended to control the direction of dripping water and help protect underlying building components.

#### Fascia

The vertical or steeply sloped roof trim located at the perimeter of a building. Typically, it is a border for the *low-slope roof system*.

#### Fastener

Any of a wide variety of mechanical securement devices and assemblies, including nails, screws, *cleats*, *clips* and bolts, which may be used to secure various *roof edge system* components.

#### Fastener Pull-out

A type of failure mode in which a *fastener* pulls away from a *substrate* (e.g.: nailer) under load.

#### Fastener Pull-through

A type of failure mode in which a *fastener* head pulls through a *substrate*, *clip* or *cleat* under load.

**Field of Roof Pressure**

The wind pressure (generally upwards) imparted on a central area of the roof.

**Gravel stop**

A flanged device, frequently metallic, designed to prevent loose aggregate from washing off the roof and to provide a continuous *roof edge system* for the roofing *membrane*.

**Gutter**

A channeled component installed along the down slope perimeter of a roof to convey runoff water from the roof to the drain leaders or downspouts.

**Low-slope roof**

A category of roofs that generally include weatherproof *membrane* types of *roof systems* installed on slopes at or less than 2:12 (9.5 degrees).

**Membrane**

A flexible or semi-flexible roof covering or waterproofing whose primary function is to exclude water.

**Metal**

Any of a category of electropositive elements that usually have a shiny surface, are generally good conductors of heat and electricity, and can be melted or fused, hammered into thin sheets.

**Parapet wall**

The part of a perimeter wall that extends above the roof.

**Roof Edge**

The point of transition from a *low-slope roof* to a lower vertical or near vertical building element, including but not limited to walls, windows, *fascia* boards, and mansard roofs.

**Roof edge system**

A component or system of components at the perimeter of the roof that typically is integrated into the *roof system* for the purpose of flashing and securing the roof *membrane*.

**Roof slope**

The angle a roof surface makes with the horizontal, expressed as a ratio of the units of vertical rise to the units of horizontal length (sometimes referred to as run), the amount or degree of such deviation. If the slope is given in inches, slope may be expressed as a ratio of rise of run, such as 2:12, or as an angle.

**Roof system**

A system of interacting roof components, generally consisting of a *membrane*, roof insulation and *roof edge systems* (not including the roof *deck*) designed to weatherproof and, sometimes, to improve the building's thermal resistance.

**Soffit**

The exposed undersurface of any exterior overhanging section of a roof eave.

**Substrate**

The upper surface of the roof *deck*, insulation, or other roofing structure upon which a roofing *membrane* or other component of the roofing system is placed or to which it is attached.

**Wind load**

Force exerted by the wind on a roof or any component of a roof.

ANSI/SPRI/FM 4435/ES-1 2017  
Test Standard for Edge  
Systems Used with Low  
Slope Roofing Systems

Approved  
January 24, 2017

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## 2.0 Background Information

### 2.1 Wind Related Roofing Damage

No area of the country is exempt from wind related roofing damage.

Public law 108-360, National Windstorm Impact Reduction Act of 2004, was signed into law by President Bush to reduce the risk wind hazards propose to life and property. It recommended improvements in and enhancements of, "standards and technologies that will enable cost effective, state of the art windstorm resistant provisions to be adopted as part of state and local building codes"

In addition, public law 114-52, National Windstorm Impact Reduction Act Reauthorization of 2015 2015, reauthorized the national windstorm impact reduction act and noted: SEC. 202. FINDINGS. NOTE: 42 USC 15701.

The Congress finds the following:

1. Hurricanes, tropical storms, tornadoes, and thunderstorms can cause significant loss of life, injury, destruction of property, and economic and social disruption. All States and regions are vulnerable to these hazards.

A study of 145 FM Global losses involving built-up roof (BUR) systems showed 85 losses (59 percent) occurred because the roof perimeter failed<sup>1</sup>. The Roofing Industry Committee on Weather Issues (RICOWI) has issued several reports summarizing their findings regarding roof damage after significant wind events. The committee found "many examples of damage appeared to originate at failed edge details"<sup>2</sup>. RICOWI notes that their "studies reinforced the need for secure *roof edge systems*, and codes that require secure roof edging need to be enforced"<sup>3</sup>.

## 3.0 Membrane Termination

Two types of *membrane* termination are industry accepted: dependently and independently terminated systems.

### 3.1 Dependently Terminated Systems

*Ballasted* systems, ribbon/spot adhered systems, or systems in which the mechanically attached roof cover is secured to the *substrate* at a distance greater than 12 in (300 mm) from the *roof edge* are considered dependently terminated by the *roof edge system*. For these systems the RE-1 and RE-2 tests are required.

### 3.2 Independently Terminated Systems

Systems in which the roof cover is fully adhered to the *substrate* or a mechanically attached roof cover is secured to the *substrate* at a distance less than or equal to 12 in (300 mm) from the *roof edge* are considered independently terminated. For these systems the RE-2 test or RE-3 test is required.

## 4.0 Edge System Resistance

*Roof edge systems* shall be tested in accordance with tests RE-1, RE-2 or RE-3 as appropriate for the application. See Appendix A—Roof Edge System Testing.

### 4.1 Dependently Terminated Systems

*Roof edge systems* designed to act as *membrane* termination shall be tested according to tests RE-1 and RE-2.

### 4.2 Edge Flashing, Gravel Stops

For *roof edge systems* where the **exposed** horizontal component is 4 in (100 mm) or less, the exposed vertical component (face) area shall be tested according to test RE-2. For exposed horizontal components greater than 4 in (100 mm), RE-3 test is required. See RE-2 test for more information.

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**4.3 Copings**

*Coping* and other *roof edge systems* for which the **exposed** horizontal component exceeds 4 in (100 mm) shall be tested according to test RE-3.

**5.0 Packaging and Identification**

*Roof edge system* components or packaging shall contain written documentation, which identifies the components, which have been ES-1 tested. Documentation, in the form of manufacturer's printed product literature or letter, shall be made available to the building owner or his/her representative.

**6.0 Installation Instructions**

Installation instructions shall be provided for all *roof edge systems* in compliance with the ES-1 test standard, and shall include *fastener* and *cleat* requirements.

**7.0 References**

1. Factory Mutual Approved Product News Vol. 21, No. 2, 2005
2. Roofing Industry Committee on Weather Issues (RICOWI), *Hurricane Katrina Wind Investigation Report*, 2007, pp. xiv
3. Roofing Industry Committee on Weather Issues (RICOWI), *Hurricanes Charley and Ivan Wind Investigation Report*, 2006, pp.xxiv

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## Appendix A

### Roof Edge System Testing

#### RE-1 Test

##### Test Method for Dependently Terminated Roof Membrane Systems

Note: This test is only required for systems described in 3.1, which do NOT contain a mechanical termination (commonly referred to as a "peel stop") within 12 in (300 mm) of the roof edge.

##### RE1.1 Apparatus

The description of the apparatus is general in nature. Any equipment capable of performing the test procedure within the allowed tolerances shall be permitted. A schematic drawing of this apparatus is shown in Figure RE1.1. The test apparatus shall be constructed so that the performance of individual components are unaffected by end constraints on the test sample. Load shall be applied and measured with calibrated load cells, each accurate to within  $\pm 3\%$  of full scale load cell values. Calibration shall be performed annually (minimum) and should be performed and recorded at 5%, 25%, 50%, and 75% of the expected maximum test values.

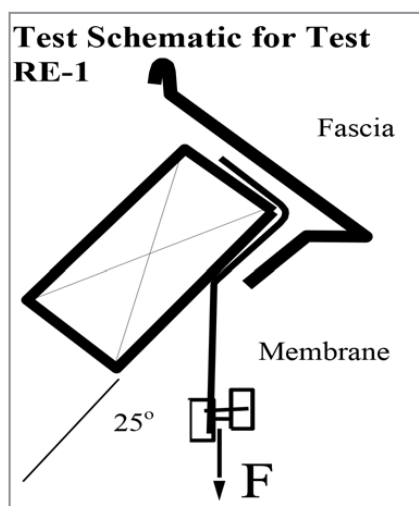


Figure RE1.1

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##### RE1.2 Safety Precautions

Proper precautions shall be taken to protect the operating personnel and observers in case of any failure.

##### RE1.3 Test Method

To test the roof edge system's ability to restrain a membrane force, uniform tension shall be applied along the length of the membrane used in the test. The minimum length of the membrane and roof edge system shall be such that the roof edge system sample contains three (3) attachment fasteners at the design fastener spacing, or is 3 ft 0 in (915 mm) in length, whichever is greater. The roof edge system shall be constructed and mounted on the base of a tensile testing device so the membrane is pulled at a 25° angle to the roof deck to simulate a billowing membrane (see Figure RE1.2).

Note that:

$$\text{Applied Load} = F * L$$

Where:

L = the length of the *roof edge system* sample, use 1 ft (300 mm) to determine the load per linear foot.

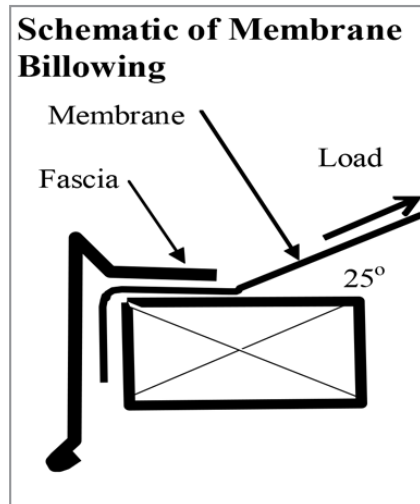


Figure RE1.2

The jaws of the tester shall be connected to two bars that clamp the *membrane* securely between them so that the load is distributed uniformly along the width of the *membrane* (see Commentary for Test RE-1). The tester is loaded at a rate of no less than 2 in/min (50 mm/min) until failure occurs or the desired *membrane* tension load is achieved. Failure is defined as any event that allows the *membrane* to come free of the *roof edge system* or the *roof edge system* to come free of its mount.

#### RE1.4 Test Results

The results of the test shall be stated in pounds/lineal foot. The results are rounded down to the nearest pound/lineal foot.

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## RE-2 Test

### Test Method for Dependently or Independently Terminated Roof edge systems

(Exposed horizontal component 4 in (100mm) or less)

#### RE2.1 Apparatus

The description of the apparatus is general in nature. Any equipment capable of performing the test procedure within the allowed tolerances shall be permitted. A schematic drawing of this apparatus is shown in Figure RE2.1. The test apparatus shall be constructed so that the performance of individual components are unaffected by end constraints on the test sample. Load shall be applied and measured with calibrated load cells, each accurate to within  $\pm 3\%$  of full scale load cell values. Calibration shall be performed annually (minimum) and should be performed and recorded at 5%, 25%, 50%, and 75% of the expected maximum test values.

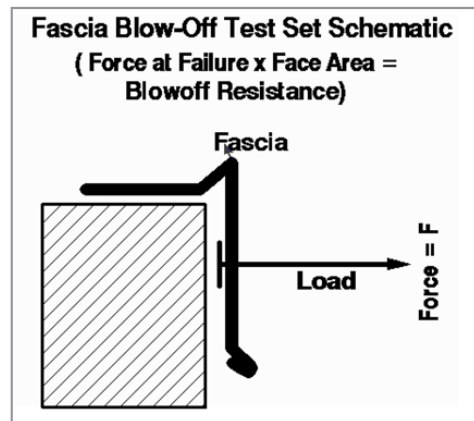


Figure RE2.1

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#### RE2.2 Safety Precautions

Proper precautions shall be taken to protect the operating personnel and observers in case of any failure.

#### RE2.3 Test Specimens

All parts of the test specimen shall be full size in length, width and all other dimensions, using the same materials, details and methods of construction and anchoring devices (such as *clips*, *cleats*, and *fasteners*) as used on the actual building. Sample length shall be a minimum of 8 ft (2.4 m). When the anchoring means at the ends of the *roof edge system* are normally used to restrain other additional lengths of the *roof edge system*, then the anchoring means shall be modified so that only that percentage that might restrain rotational movement in the test specimen is used.

**RE2.4 Procedure****RE2.4.1 Gravity**

Any undue influence from gravity that does not occur during actual installation shall be omitted from the test specimen. If the test specimen is inverted, a gravity correction shall be made in the determination of the allowable superimposed loading. Tests run in an inverted position shall include data from pressure reversal or an upright specimen to show that unlatching of the *drip edges* at the *cleats* will not occur in the normal orientation.

**RE2.4.2 Loading**

Loading shall be applied uniformly on centers no greater than 12 in (300 mm) to the centerline of the vertical face of the *roof edge system*. Loading shall be applied on the horizontal centerline of the face. Loads shall be applied incrementally and held for not less than 60 seconds after stabilization has been achieved at each incremental load. Between incremental loads, the load shall be reduced to zero until the specimen stabilizes (5 minutes maximum). After this stabilization period, initiate the next higher incremental load. Loading to the face of the *roof edge system* shall be applied in **increments** not to exceed 25-lb/ft<sup>2</sup> (120 kg/m<sup>2</sup>) until approximately ½ of the expected failure load is obtained. Thereafter, increments of load shall not exceed 10-lb/ft<sup>2</sup> (50-kg/m<sup>2</sup>). Loading **speed** shall be such that each incremental load up to and including 150 psf (7.2 kPa) shall be achieved in 60 seconds or less. Above 150 psf (7.2 kPa), incremental loading shall be achieved in 120 seconds or less.

Loading shall proceed as indicated until the test specimen either fails or exceeds the required design pressure. The last 60-second load sustained without failure is the maximum load recorded.

**RE2.4.3 Failure**

Failure shall be loss of securement of a component of the *roof edge system*.

**RE2.4.4 Test Results**

The data for the conditions described in 2.4.3 above shall be recorded. If this data is in units of force (pounds), the data shall be converted to pressure by dividing the force by the area of the face:

$$\text{Pressure} = \frac{\text{Outward Force}}{\text{Face Height} \times \text{Face Length}}$$

- ▶ Pressure is measured in pounds per square foot
- ▶ Force is measured in Pounds Force
- ▶ Face Length is the test sample length in feet
- ▶ Face Height is in feet (inches÷12)

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## RE-3 Test for Copings

(Exposed horizontal component exceeds 4 in (100 mm))

### RE3.1 Apparatus

This description of the apparatus is general in nature. Any equipment capable of performing the test procedure within the allowed tolerances shall be permitted. A schematic drawing of this apparatus is shown in Figures RE3.1 and RE3.2. The test apparatus shall be constructed so that the performance of individual components are unaffected by end constraints on the test sample. Load shall be applied and measured with calibrated load cells, each accurate to within  $\pm 3\%$  of full scale load cell values. Calibration shall be performed annually (minimum) and should be performed and recorded at 5%, 25%, 50%, and 75% of the expected maximum test values.

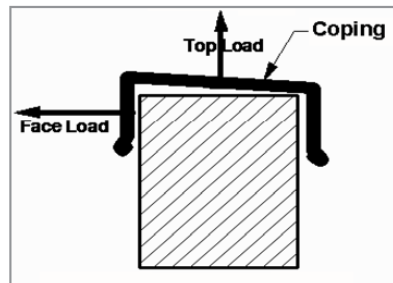


Figure RE-3.1 RE-3 Test—Face Leg Pull

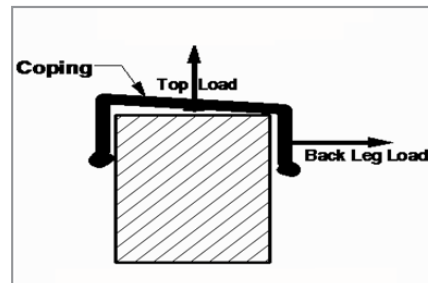


Figure RE-3.2 RE-3 Test—Back Leg Pull

### RE3.2 Safety Precautions

Proper precautions shall be taken to protect the operating personnel and observers in case of any failure.

### RE3.3 Test Specimens

All parts of the test specimen shall be full size in length, width and all other dimensions, using the same materials, details and methods of construction and anchoring devices (*fasteners, clips and cleats*) as used on the actual building. Sample length shall be a minimum of 8 ft (2.4 m). When the anchoring means at the ends of the *roof edge system* are normally used to restrain other additional lengths of the *roof edge system*, then the anchoring means shall be modified so that only that percentage that might restrain rotational movement in the test specimen is used. A minimum of 1 face/top test and 1 top/back test shall be performed.

### RE3.4 Procedure

#### RE3.4.1 Gravity

Any undue influence from gravity that does not occur during actual installation shall be omitted from the test specimen. If the test specimen is inverted, a gravity correction shall be made in the determination of the allowable superimposed loading. Tests run in an inverted position shall include data from pressure reversal or an upright specimen to show that unlatching of the *drip edges* at the *cleats* will not occur in the normal orientation.

#### RE3.4.2 Loading

Top and face loadings shall be applied simultaneously in the vertical and horizontal directions in the ratio of 1.73 lbs/sf top (vertical load) to 1 lb/sf face (horizontal load). Loading shall be applied uniformly on centers no greater than 12 in (300 mm) to the top of the *coping* and to one of the faces of the *coping* at the same time. Loads shall be applied on parallel horizontal centerlines of the surfaces tested.

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Loads shall be applied incrementally and held for not less than 60 seconds after stabilization has been achieved at each incremental load. Between incremental loads, the load shall be reduced to zero until the specimen stabilizes (5 minutes maximum), before the next higher incremental load is initiated. Vertical loading to the top of the *roof edge system* shall be applied in **increments** not to exceed 25 lb/ft<sup>2</sup> (120 kg/m<sup>2</sup>) until approximately ½ of the expected failure load is obtained. Thereafter, increments of load shall not exceed 10 lb/ft<sup>2</sup> (50 kg/m<sup>2</sup>). Loading **speed** shall be such that each incremental load up to and including 150 psf (7.2 kPa) shall be achieved in 60 seconds or less. Above 150 psf (7.2k Pa), incremental loading shall be achieved in 120 seconds or less.

Loading shall proceed as indicated until the test specimen either fails or exceeds the required design pressure. The last 60-second load sustained without failure is the maximum load recorded.

Both face and back legs shall be tested in this manner using separate test samples. Thus, one sample to test the face while loading the top (Figure RE3.1), and the other to test the back leg while loading the top (Figure RE3.2).

#### RE3.4.3 Failure

Failure shall be loss of securement of a component of the *roof edge system*.

#### RE3.4.4 Test Results

The data for the conditions described in 3.4.3 above shall be recorded. If this data is units of force (in pounds), it shall be converted to pressure by dividing the force by the area of the face:

$$\text{Pressure} = \frac{\text{Outward Force}}{\text{Face Height} \times \text{Face Length}}$$

- ▶ Pressure is measured in pounds per square foot
- ▶ Force is measured in Pounds Force
- ▶ Face Length is the test sample length in feet
- ▶ Face Height is in feet (inches+12)

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## Appendix B

### Commentary

This Commentary consists of explanatory and supplementary material designed to help designers, roofing contractors, manufacturers, testing facilities, and others in applying the requirements of the preceding Standard.

This Commentary is intended to create an understanding of the requirements through brief explanations of the reasoning employed in arriving at these requirements.

The sections of this Commentary are numbered to correspond to sections of the Standard to which they refer. Since having supplementary material for every section of the Standard is not necessary, not all sections are referenced in this Commentary.

#### C1.1 Scope

This test Standard was developed for use with Built-Up (BUR), Single-Ply and Modified Bitumen roofing systems.

The low slope value defined in this Standard comes from an industry accepted value of  $\leq 9.5$  degrees (2:12).

*Roof edge systems* serve aesthetic as well as performance functions for a building. Aesthetically, they provide an attractive finish and sometimes even a key feature to the exterior of a building. Of course, no matter how aesthetically pleasing, a *roof edge system* must act primarily as an effective mechanical termination and transition between the roof and other building components such as *parapet walls*, vertical walls, corners, *soffits*, *fascia* boards, etc.

A high performance *roof edge system* provides many benefits. It acts as a water seal at the *roof edge*. When it is the means by which the *membrane* is attached to the building at the *roof edge*, it must also exhibit sufficient holding power to prevent the *membrane* from pulling out at the *roof edge* under design wind conditions. Furthermore, the *roof edge system* itself must not come loose in a design wind. A loose component of a *roof edge system* not only endangers surrounding property or persons, but it also exposes the roofing to blow-off, starting at the *roof edge*.

#### C2.0 Background Information

The 1980s saw a dramatic increase in the popularity of single-ply *roof systems*. With this increase, *roof edge systems* began receiving additional attention. Throughout the 1980s into the early 1990s a variety of organizations developed *roof edge* termination recommendations and testing criteria. These standards, however, were not universal and each was focused on the specific needs or purpose of that organization. This created a challenge for design professionals in selecting the appropriate *roof edge system*, which would perform to the needs of their particular project.

In 1995 the Single Ply Roofing Industry (SPRI) began the process of developing a consensus *roof edge* performance standard. The goal was to create a standard that would have real-world practicality and provide unified guidance to design professionals as well as those that fabricate and install *roof edge systems*.

In 1998 the American National Standards Institute (ANSI) approved what was to become the ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems. In 2003 the ES-1 Standard was included in the International Building Code (IBC). 2006 and later versions of IBC all require *roof edge systems* to be tested per the test methods in this standard.

Today, the central role that *roof edge systems* play in protecting against *wind loads* is gaining increasing awareness due to renewed attention of significant wind events.

#### C3.0 Membrane Termination Systems

The *roof edge system* may be the only restraint preventing a roof blow-off. Mechanically attached *membranes* may be attached only by the *roof edge system* at the building's *roof edge*. In *ballasted* systems, ballast may be scoured away from the *roof edge*. *Ballasted* roofs should be designed to meet ANSI/SPRI RP-4, *Wind Design Standard for Ballasted Single-Ply Roofing Systems*, to prevent excessive scour.

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Consideration should be given to sealing the *roof edge* against air infiltration. Air infiltration may affect the loads on the roofing and the *roof edge system* by adding a positive pressure under the roofing, thus compounding the effect of negative pressure above the roofing.

BUR and most modified bitumen *membranes* are fully adhered to *roof deck* or insulation. When they are mechanically attached they shall follow the rules for all mechanically attached systems.

### C3.1 **Dependently terminated**

*Ballasted Systems* or systems in which the mechanically attached roof cover is secured to the *substrate* at a distance greater than 12 in (300 mm) from the *roof edge system* are considered dependently terminated by the *roof edge system*. For these systems Test RE-1 is applicable. Dependently Terminated *roof edge systems* are often called Edge Flashings or *Gravel Stops*. These products or designs complete the horizontal *deck* or *membrane* plane at its transition to a vertical wall drop, typically at a 90° angle.

Normally the roofing *membrane* is restrained at the *roof edge* by means of a mechanical gripping of the *membrane* by the *roof edge system* or by a bond between the *membrane* and *roof edge system*.

A *roof edge system* may also function as an air seal, when combined with an air retarder throughout the field of the roof, by preventing air infiltration under the roofing *membrane*. To resist air infiltration, nailers should be sealed to the building with appropriate sealant material. Where multiple courses of nailers are used, these nailer courses should also be sealed to each other. Butt joints should also be sealed.

Termination devices against higher vertical walls inboard of the *roof edge* are not considered by this Standard.

### C3.2 **Independently terminated**

Systems in which the roof cover is fully adhered to the *substrate* or a mechanically attached roof cover that is secured the *substrate* at a distance less than or equal to 12 in (300 mm) from the roof side of the *roof edge system* are considered independently terminated. For these systems Tests RE-2 or RE-3 are applicable.

#### **Copings/Caps**

*Copings/Caps* are independently terminated systems: These are *roof edge systems* that cover the tops of *parapet walls*, usually with the roofing *membrane* terminated under them.

#### **Gutters**

Gutters and other rain-carrying devices are beyond the scope of this Standard. However, the designer should be aware that their securement is important to the proper functioning of the building, and reference ANSI/SPRI GT-1 *Test Standard for Gutter Systems* for the testing of gutter systems.

### C 4.0 **Edge System Resistance**

*Roof edge systems* may be selected from manufacturers who certify certain minimum performance to meet design requirements, based upon testing. Any *roof edge system* may be used provided that it is tested and certified by an independent testing laboratory to meet the wind design requirements.

The vertical face of an edge flashing (gravel stop) shall be tested according to Test RE-2 and provide a strength that meets or exceeds the required horizontal design pressure. The test shall be applicable to systems with exposed horizontal components less than 4 in (100 mm) as detailed in the RE-2 Test Method; otherwise Test RE-3 is applicable.

The vertical and horizontal faces of *copings* (and like *roof edge systems*) shall be tested according to Test RE-3 and provide a strength that meets or exceeds the **horizontal and vertical pressures** required.

The *roof edge system*, when used for securing dependently terminated roofing systems, shall be tested according to Test RE-1 to provide a strength that meets

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or exceeds the calculated *membrane* tension. See RE-1 Classification Tables in Commentary.

See Test Method RE-1, RE-2, and RE-3 for further information.

**C5.0 Packaging and Identification**

Because IBC requires that *roof edge systems* be tested per ES-1, owners and code officials need documentation packaged with the *roof edge system* to identify that it has been tested. Recognized or certified third party organizations may require additional auditing.

**C6.0 Installation Instructions**

In order for the *roof edge system* to perform as tested it must be installed in the same manner as the tested *roof edge system*. Installation instructions are required to assure the proper *cleats, clips, fasteners* and other components are installed in the correct location and at the correct spacing.

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### Test Method RE-1 Commentary

The *roof edge system* is a key anchor point holding the *membrane* in place. During high-speed wind loading, the *roof system* can create extreme loads on the *roof edge system*.

Referring to Figure RE1.3 for a mechanically attached system, the loading depends upon the distance,  $r$ , of the first row of *fasteners* to the edge termination. The overall shape of the *membrane* is based upon previous tests indicating that the *membrane* deformation can be well approximated by a 25 degree angle<sup>4,5</sup>. Figure RE1.4 shows a closer look at the *membrane* forces.

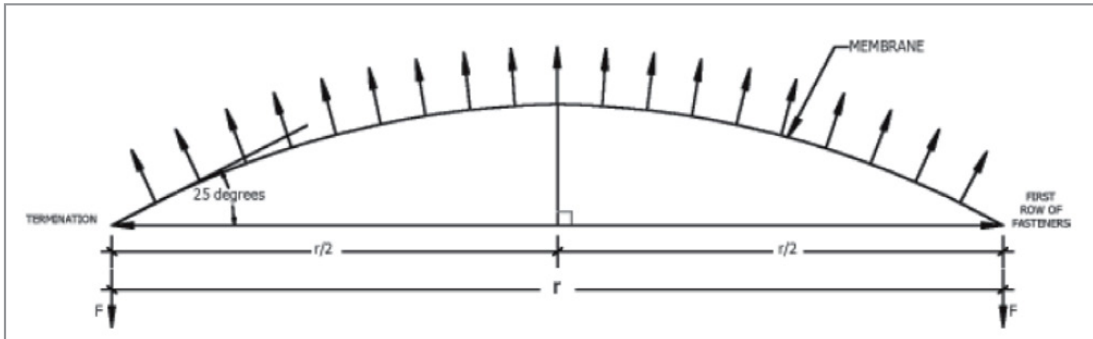


Figure RE1.3—Mechanically Attached Roof Forces

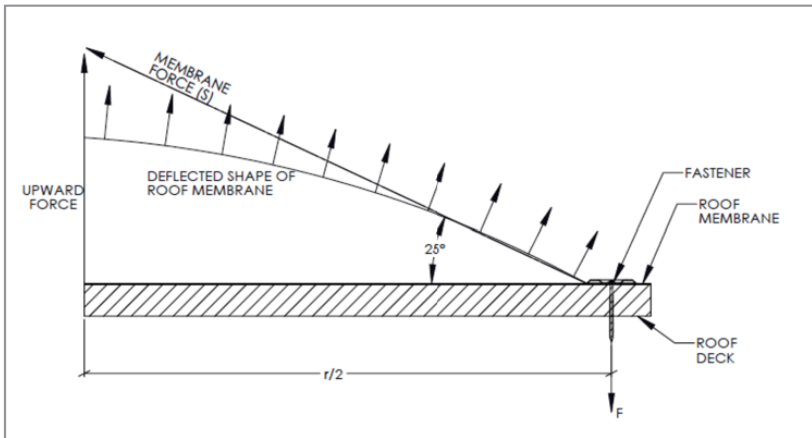


Figure RE1.4—System of Forces,  $\frac{1}{2}$  Membrane width between Fasteners

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- 4 Allen, D.J., and Phalen, T.E., *Stress-Strain Characteristics for EPDM, CSPE, and PVC for the Development of Stresses in Membranes Utilized as Single-Ply Roof Systems*, 1991 International Symposium on Roofing Technology.
- 5 Garrigus, P.C. *The Stress-Strain, Stress-Thickness and Stress-Width Characteristics of Non-Reinforced, Glass Reinforced and Polyester Reinforced PVC Roofing Membrane*, Graduate Thesis, NU Student School of Engineering Technology, March 1991.

If an upward pressure ( $\text{lb/ft}^2$ ) is applied to the *membrane*, then the upward force = upward pressure  $\times r/2$  for one half of the *membrane* width  $r$  (a single *fastener* will have a force,  $F$ , to resist this load). Assuming a  $25^\circ$  deflected shape, then the *membrane* force,  $S$ , can be found from the equations:

$$\sin 25^\circ = \frac{\text{UpwardForce}}{S}$$

$$\sin 25^\circ = \frac{\text{UpwardPressure} * \frac{r}{2}}{S}$$

Thus,

$$S = \frac{\text{UpwardPressure} * \frac{r}{2}}{\sin 25^\circ}$$

The precision and bias of this test measure has not been determined. In the absence of third party witness testing/verification, the ES-1 committee recommends round robin testing of standard, pre-manufactured edge systems to establish lab-to-lab variability of individual test results.

#### Test Method RE-1 Commentary—Fully Adhered Roof Systems

Fully adhered systems are assumed to apply no stress on the *roof edge system* under consideration, unless either the *metal* is loosened or the *membrane* is in peel from the pressure differential between the exterior and interior of the system; however, recent hurricane investigations have shown that both can occur.

#### Test Method RE-1 Commentary—Membrane Tension

The following tables are provided as a reference, when testing according to RE-1, for approximating *membrane* tension based upon the calculated Field of Roof or Vertical Perimeter Pressure, and the distance to the first row of *fasteners* in a mechanically attached system. For *ballasted* system  $5 < r \leq 6$  is used. These tables are not intended to be used for design. *Design load* should be determined as required by the Authority Having Jurisdiction.

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## RE-1 Classifications—Dependently Terminated Systems

Occupancy Category II (Importance Factor,  $I=1.0$ )<sup>1</sup>For  $h \leq 60$  feet, Enclosed Buildings

Field of Roof Pressure $q_{fz}$ psf (kPa)	Vertical Perimeter Pressure $P_{vp}$ psf (kPa)	Membrane Tension lb/ft (kg/m)				
		Distance to first Row of Fasteners ft (m)				
		$1 < r \leq 2$ (0.3 < $r \leq 0.6$ )	$2 < r \leq 3$ (0.6 < $r \leq 0.9$ )	$3 < r \leq 4$ (0.9 < $r \leq 1.2$ )	$4 < r \leq 5$ (1.2 < $r \leq 0.5$ )	(note 2) $5 < r \leq 6$ (1.5 < $r \leq 1.8$ )
$q_{fz} \leq 30.0$ ( $q_{fz} \leq 1.44$ )	101 (4.83)	239 (356)	358 (533)	477 (710)	596 (887)	716 (1066)
$30.0 < q_{fz} \leq 37.5$ ( $1.44 < q_{fz} \leq 1.8$ )	126 (6.03)	298 (443)	447 (664)	5 (887)	745 (1109)	894 (1330)
$37.5 < q_{fz} \leq 45.0$ ( $1.8 < q_{fz} \leq 2.15$ )	151 (7.24)	358 (533)	537 (799)	716 (1066)	894 (1330)	1073 (1597)
$45.0 < q_{fz} \leq 52.5$ ( $2.15 < q_{fz} \leq 2.51$ )	176 (8.45)	417 (21)	62 (932)	835 (1243)	1042 (1552)	11 (1863)
$52.5 < q_{fz} \leq 60.0$ ( $2.51 < q_{fz} \leq 2.87$ )	202 (9.65)	477 (710)	716 (1066)	954 (1419)	1193 (1775)	1431 (2130)
$60.0 < q_{fz} \leq 67.5$ ( $2.87 < q_{fz} \leq 3.23$ )	227 (10.9)	537 (799)	84 (1198)	107 (1597)	1342 (1997)	1610 (2395)
$67.5 < q_{fz} \leq 75.0$ ( $3.23 < q_{fz} \leq 3.59$ )	252 (12.1)	596 (887)	894 (1330)	1193 (1775)	1490 (2218)	1789 (2661)
$75.0 < q_{fz} \leq 82.5$ ( $3.59 < q_{fz} \leq 3.95$ )	277 (13.3)	656 (976)	984 (1464)	1312 (191)	1640 (244)	1968 (2928)
$82.5 < q_{fz} \leq 90.0$ ( $3.95 < q_{fz} \leq 4.31$ )	302 (14.5)	716 (1066)	1073 (1597)	1431 (2130)	1789 (2661)	2146 (3194)
$90.0 < q_{fz} \leq 97.5$ ( $4.31 < q_{fz} \leq 4.67$ )	328 (15.7)	775 (1152)	1163 (1731)	1550 (2307)	1937 (2884)	2326 (3460)
$97.5 < q_{fz} \leq 105.0$ ( $4.67 < q_{fz} \leq 5.03$ )	353 (16.9)	83 (1243)	1251 (1863)	1669 (2484)	2087 (3106)	2504 (3725)
$105 < q_{fz} \leq 112.5$ ( $5.03 < q_{fz} \leq 5.39$ )	378 (18.1)	894 (1330)	1342 (1997)	1789 (2661)	2236 (3328)	2683 (3992)
$112.5 < q_{fz} \leq 120$ ( $5.39 < q_{fz} \leq 5.75$ )	403 (19.3)	954 (1419)	1431 (2130)	1907 (2839)	2384 (3548)	2861 (4258)
$120 < q_{fz} \leq 127.5$ ( $5.75 < q_{fz} \leq 6.11$ )	428 (20.5)	1013 (1509)	1521 (2263)	2027 (3016)	2534 (3770)	3040 (4525)

## Table Notes:

1.  $I = 1$  so this table is also applicable when no importance factor is required. Adjust for other  $I$  values.
2.  $5 < r \leq 6$  column to be used for *ballasted* systems. See Appendix A—RE-1 test information.

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## RE-1 Classifications—Dependently Terminated Systems

Occupancy Category II (Importance Factor  $I=1.0$ )<sup>1</sup>For  $h > 60$  feet, Enclosed Buildings

Field of Roof Pressure $q_{fz}$ psf (kPa)	Vertical Perimeter Pressure $P_{vp}$ psf (kPa)	Membrane Tension lb/ft (kg/m)				
		Distance to first Row of Fasteners ft				
		$1 < r \leq 2$ ( $0.3 < r \leq 0.6$ )	$2 < r \leq 3$ ( $0.6 < r \leq 0.9$ )	$3 < r \leq 4$ ( $0.9 < r \leq 1.2$ )	$4 < r \leq 5$ ( $1.2 < r \leq 0.5$ )	(note 2) $5 < r \leq 6$ ( $1.5 < r \leq 1.8$ )
$q_{fz} \leq 30.0$ ( $q_{fz} \leq 1.44$ )	94 (4.51)	224 (333)	336 (498)	446 (664)	559 (830)	670 (997)
$30.0 < q_{fz} \leq 37.5$ ( $1.44 < q_{fz} \leq 1.8$ )	118 (5.64)	278 (415)	41 (622)	559 (830)	698 (1037)	836 (1245)
$37.5 < q_{fz} \leq 45.0$ ( $1.8 < q_{fz} \leq 2.15$ )	141 (6.77)	336 (498)	502 (747)	670 (997)	836 (1245)	1004 (1494)
$45.0 < q_{fz} \leq 52.5$ ( $2.15 < q_{fz} \leq 2.51$ )	165 (7.89)	390 (581)	586 (873)	782 (1163)	975 (142)	1171 (1742)
$52.5 < q_{fz} \leq 60.0$ ( $2.51 < q_{fz} \leq 2.87$ )	188 (9.02)	446 (664)	670 (997)	893 (1329)	1116 (1661)	1339 (1993)
$60.0 < q_{fz} \leq 67.5$ ( $2.87 < q_{fz} \leq 3.23$ )	212 (10.2)	502 (747)	752 (1121)	1004 (1494)	1255 (1869)	1506 (2242)
$67.5 < q_{fz} \leq 75.0$ ( $3.23 < q_{fz} \leq 3.59$ )	236 (11.3)	559 (830)	836 (1245)	1116 (1661)	1395 (2075)	1674 (2491)
$75.0 < q_{fz} \leq 82.5$ ( $3.59 < q_{fz} \leq 3.95$ )	259 (12.4)	613 (914)	920 (1370)	1229 (1827)	1535 (2283)	1842 (2740)
$82.5 < q_{fz} \leq 90.0$ ( $3.95 < q_{fz} \leq 4.31$ )	283 (13.5)	670 (997)	1004 (1494)	1339 (1993)	1674 (2491)	2008 (2989)
$90.0 < q_{fz} \leq 97.5$ ( $4.31 < q_{fz} \leq 4.67$ )	306 (14.7)	725 (1078)	1088 (1620)	1451 (2159)	1813 (2698)	2176 (3238)
$97.5 < q_{fz} \leq 105.0$ ( $4.67 < q_{fz} \leq 5.03$ )	330 (15.8)	78 (1163)	1171 (1742)	1562 (2325)	953 (2907)	2343 (3487)
$105 < q_{fz} \leq 112.5$ ( $5.03 < q_{fz} \leq 5.39$ )	353 (16.9)	836 (1245)	1255 (1869)	1674 (2491)	2093 (3114)	2511 (3735)
$112.5 < q_{fz} \leq 120$ ( $5.39 < q_{fz} \leq 5.75$ )	377 (18.0)	893 (1329)	339 (1993)	1785 (2656)	2231 (3320)	28 (3985)
$120 < q_{fz} \leq 127.5$ ( $5.75 < q_{fz} \leq 6.11$ )	400 (19.2)	948 (1412)	1424 (2118)	1896 (2823)	2371 (3528)	2846 (4235)

## Table Notes:

1.  $I = 1$  so this table is also applicable when no importance factor is required. Adjust for other  $I$  values.
2.  $5 < r \leq 6$  column to be used for *ballasted* systems. See Appendix A—RE-1 test information.

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## Test Methods RE-2 and RE-3 Commentary

### Stabilization

Stabilization is necessary during loading to ensure that the specimen has reached equilibrium before considering a sustained load for a period of 60 seconds. As the specimen approaches its ultimate capacity, stabilization of the specimen will generally take longer to achieve.

### Loading

These test methods consist of applying loads on surfaces of a test specimen and observing deformations and the nature of any failures of principal or critical elements of the *roof edge systems*. Loads are applied to simulate the static wind loading of the members. Test RE-2 requires horizontal loading on only the vertical face since the upward wind loading on an edge system member is considered to be negligible because of the small area exposed to uplift.

A recovery period between increases in incremental loading is allowed for the test specimen to attempt to assume its original shape prior to applying the next load level. The rate of sustained loading can be a critical issue when specimens are subjected to continuously increasing load until failure is achieved. Loading rate has little meaning in RE-2 and RE-3 because these methods employ incrementally increased loads sustained for long times followed by brief recovery periods. An incremental method is more stringent than continuous loading due to the requirement of a 60 second holding load.

The RE-2 and RE-3 Test procedures require full-length specimens because end conditions of discreet sections of *copings* and edge flashings can play a profound role in the failure mode of the materials. Furthermore, those products having *clips* (not continuous *cleats*) can exhibit different performance under testing than in the field if the *clips* do not act upon the products as they would in the field.

No special testing is required of fabricated miters. However, the *roof edge system* from which the miter has been fabricated shall have been tested to meet the calculated design loads of the corner region. The precision and bias of these test measures have not been determined. In the absence of third party witness testing/verification, the ES-1 committee recommends round robin testing of standard, pre-manufactured *roof edge systems* to establish lab-to-lab variability of individual test results.

The external Pressure Coefficients (GCp) used to calculate horizontal and vertical pressures vary by building height (<60 or >60') and location on the roof (perimeter or corner region). The ratio of top (vertical) pressure to face (horizontal) pressure ranges from 1.71 to 2.30 depending on the building height and roof location. To simplify testing and avoid having to test *roof edge systems* at four different pressure ratios, the ratio for testing has been set at 1.73. This 1:73 ratio is deemed to be the most conservative as greater loads are applied to the face and back of the *coping* where failure most often occurs. 1.73 is also the ratio typically was used when testing per ANSI/SPRI ES-1 2003 and ANSI/SPRI/FM 4435/ES-1 2011; therefore, products tested in accordance with one of those previous versions should not require re-testing.

### Failure

Some examples of component failure that will not enable the *roof edge system* to perform as designed would be:

- ▶ Full fastener pull-out
- ▶ Fastener pull-through
- ▶ Collapse of a *cleat*, *fascia* or cover
- ▶ Disengagement of cover from a *cleat* or *clip*

Consideration should be given to permanent deformation observed during testing. A *roof edge system* with no load being applied, which exhibits permanent deformation from its original shape, may allow water infiltration and be subjected to peeling wind forces that could compromise the intended performance of the *roof edge system*.

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## Test Method RE-2 and RE-3 Commentary Horizontal and Vertical Edge Pressures

The following tables are provided as a reference, when testing according to RE-2 and RE-3, for approximating the Horizontal and Vertical Loads at the perimeter and corner based upon the calculated Field of Roof pressure. These tables are not intended to be used for design. *Design load* should be determined as required by the Authority Having Jurisdiction.

### Horizontal and Vertical Edge Pressures Enclosed Buildings Occupancy Category II ( $I=1.0$ )<sup>1</sup> $h \leq 60$ feet

Field of Roof Pressure $q_{tz}$ psf (kPa)	Horizontal Load psf (kPa)		Vertical Load psf (kPa)	
	Perimeter $P_{hp}$	Corner $P_{hc}$	Perimeter $P_{vp}$	Corner $P_{vc}$
30 (1.44)	58 (2.8)	73 (3.5)	101 (4.8)	152 (7.3)
37.5 (1.80)	73 (3.5)	91 (4.3)	126 (6.0)	190 (9.1)
45 (2.15)	87 (4.2)	109 (5.2)	151 (7.2)	228 (10.9)
52.5 (2.51)	102 (4.9)	127 (6.1)	176 (8.4)	266 (12.7)
60 (2.87)	116 (5.6)	145 (7.0)	202 (9.7)	304 (14.5)
67.5 (3.23)	131 (6.3)	163 (7.8)	227 (10.9)	342 (16.4)
75 (3.59)	146 (7.0)	182 (8.7)	252 (12.1)	380 (18.2)
82.5 (3.95)	160 (7.7)	200 (9.6)	277 (13.3)	417 (20.0)
90 (4.31)	175 (8.4)	218 (10.4)	302 (14.5)	455 (21.8)
97.5 (4.67)	189 (9.1)	236 (11.3)	328 (15.7)	493 (23.6)
×	1.94* ×	2.42* ×	3.36* ×	5.06* ×

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#### Table Notes:

1.  $I = 1$  so this table is also applicable when no importance factor is required. Adjust for other  $I$  values as required.
2. Horizontal and vertical load values are calculated directly using field of roof pressure given in column 1
3. Horizontal and vertical load values are calculated using External Pressure Coefficients ( $G C_p$ ) of 0.97 horizontal perimeter, 1.21 horizontal corner, 1.68 vertical perimeter, and 2.53 vertical corner.
4. Horizontal and vertical load values contain a safety factor of 2.0.

**Horizontal and Vertical Edge Pressures**  
**Enclosed Buildings**  
**Occupancy Category II ( $I=1.0$ )<sup>1</sup>**  
 **$h > 60$  feet**

Field of Roof Pressure $q_{rz}$ psf (kPa)	Horizontal Load psf (kPa)		Vertical Load psf (kPa)	
	Perimeter $P_{rp}$	Corner $P_{rc}$	Perimeter $P_{rp}$	Corner $P_{rc}$
30 (1.44)	41 (2.0)	75 (3.6)	94 (4.5)	128 (6.1)
37.5 (1.80)	51 (2.4)	94 (4.5)	118 (5.6)	161 (7.7)
45 (2.15)	61 (2.9)	113 (5.4)	141 (6.8)	193 (9.2)
52.5 (2.51)	71 (3.4)	131 (6.3)	165 (7.9)	225 (10.8)
60 (2.87)	82 (3.9)	150 (7.2)	188 (9.0)	257 (12.3)
67.5 (3.23)	92 (4.4)	169 (8.1)	212 (10.1)	289 (13.8)
75 (3.95)	102 (4.9)	188 (9.0)	236 (11.3)	321 (15.4)
82.5 (3.95)	112 (5.4)	206 (9.9)	259 (12.4)	353 (16.9)
90 (4.31)	122 (5.9)	225 (10.8)	283 (13.5)	385 (18.4)
97.5 (4.67)	133 (6.3)	244 (11.7)	306 (14.7)	417 (20.0)
105 (5.03)	143 (6.8)	263 (12.6)	330 (15.8)	449 (21.5)
112.5 (5.39)	153 (7.3)	281 (13.5)	353 (16.9)	482 (23.1)
120 (5.75)	163 (7.8)	300 (14.4)	377 (18.0)	514 (24.6)
127.5 (6.10)	173 (8.3)	319 (15.3)	400 (19.2)	546 (26.1)
×	1.36* ×	2.5* ×	3.14* ×	4.28* ×

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**Table Notes:**

1.  $I = 1$  so this table is also applicable when no importance factor is required. Adjust for other  $I$  values as required.
2. Horizontal and vertical load values are calculated directly using field of roof pressure given in column 1
3. Horizontal and vertical load values are calculated using External Pressure Coefficients (GCp) of 0.68 horizontal perimeter, 1.25 horizontal corner, 1.57 vertical perimeter, and 2.14 vertical corner.
4. Horizontal and vertical load values contain a safety factor of 2.0.



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R10145**

40

Date Submitted	02/10/2022	Section	35	Proponent	Greg Keeler
Chapter	35	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

1518.4, RAS 115, RAS 130, TAS 110,

### Summary of Modification

This modification introduces ASTM D8257, the first consensus Standard related exclusively to synthetic underlayments. It also revises the language related to underlayment fastening.

### Rationale

This modification introduces ASTM D8257, the first consensus Standard related exclusively to synthetic underlayments.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

This modification will provide necessary clarity for qualification of synthetic underlayments.

#### Impact to building and property owners relative to cost of compliance with code

No impact

#### Impact to industry relative to the cost of compliance with code

No impact

#### Impact to small business relative to the cost of compliance with code

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**  
Yes

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**  
Yes

**Does not degrade the effectiveness of the code**  
Yes

## CHAPTER 35

### REFERENCED STANDARDS

#### ASTM

ASTMInternational	
100BarrHarborDrive,P.O. BoxC700 WestConshohocken,PA 19428-2959	
Standard reference	
number	Title
-	
D8257	Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

**R10479**

41

Date Submitted	02/15/2022	Section	35	Proponent	Greg Keeler
Chapter	35	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

10474

### Summary of Modification

Adds ASTM C1902 to Chapter 35 to correlate with Mod 10475 to add same to Table 1508.2

### Rationale

Adds ASTM C1902 to Chapter 35 to correlate with Mod 10475 to add same to Table 1508.2

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None

**Impact to building and property owners relative to cost of compliance with code**

None

**Impact to industry relative to the cost of compliance with code**

None

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Yes

**Does not degrade the effectiveness of the code**

Does not degrade

ASTM

ASTM International  
100 Barr Harbor Drive P.O. Box C700  
West Conshohocken, PA 19428-2959

Standard reference number	Title
-	
C1902	Standard Specification for Cellular Glass Insulation Used in Building and Roof Applications

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Building

R10513

42

Date Submitted	02/15/2022	Section	1	Proponent	Chadwick Collins
Chapter	35	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Update to current standard version

### Rationale

This proposal updates the reference to the current version of the standard and updates the title match the title found on the document

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No cost impact to local entities with the update to the most recent standard. Provides enforcement to utilize the most current applicable version of the standard.

#### Impact to building and property owners relative to cost of compliance with code

No cost impact to building & property owners as products continue to comply with the updated version of the standard. Allows assessment of products available to most current version of the standard.

#### Impact to industry relative to the cost of compliance with code

No negative cost impact to industry as this would align with the current version of the standard instead of showing compliance with multiple versions.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This updates to the most current version of the product specification standard.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

The updated standard provides clarity on product assessment.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No changes to the standard involved changing material properties requirements from previous versions.  
**Does not degrade the effectiveness of the code**  
The revised standard does not lessen any requirements present in previous versions of the standard.

~~D6083-18~~ D6083/D6083M-21

Specification for Liquid-Applied Acrylic Coating Used in Roofing



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Existing Building

**R10084**

43

Date Submitted	02/04/2022	Section	401	Proponent	Michael Silvers (FRSA)
Chapter	4	Affects HVHZ	Yes	Attachments	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Returns code language included in the 2017 FBC that was apparently unintentionally deleted during the reorganization of Chapters 4, 5 & 6 during IBC modifications. These changes were later adopted into the 2020 FBC.

### Rationale

Returns code language included in the 2017 FBC that was apparently unintentionally deleted during the reorganization of Chapters 4, 5 & 6 during IBC modifications. These changes were later adopted into the 2020 FBC. The deleted sections are important when interpreting how the code deals with repairs.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**  
Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

#### 401.1 Scope.

Repairs, as defined in Chapter 2, include the patching or restoration or replacement of damaged materials, elements, equipment or fixtures for the purpose of maintaining such components in good or sound condition with respect to existing loads or performance requirements.

#### 402.2 Application

Repairs shall comply with the requirements of this chapter and with the provisions of Section 706. Repairs to historic buildings need only comply with Chapter 12.

#### 401.23 Conformance.

The work shall not make the building less conforming than it was before the repair was undertaken.

#### 401.2.4 Related work.

Work on nondamaged components that is necessary for the required repair of damaged components shall be considered part of the repair and shall not be subject to the provisions of Chapter 7, 8, 9, 10 or 11.

#### [BS]401.3 Flood hazard areas.

In flood hazard areas, repairs that constitute substantial improvement shall require that the building comply with Section 1612 of the Florida Building Code, Building, or Section R322 of the Florida Building Code, Residential, as applicable.


#### 401.4 Structure seaward of a coastal construction line.

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

#### 401.5 Dangerous buildings.

When an historic building is determined as dangerous, no work shall be required except as necessary to correct identified dangerous conditions.

## From 2020 FBC Code Changes Presentation



### FBCEB CHAPTER ~~6~~ 4 REPAIRS

Relocate Chapter 6 as follows: ~~6~~ 4

#### REPAIRS

(Renumber Subsequent sections in this Chapter) (Renumber Chapters 4 and 5)

RENUMBERED CHAPTERS EB

- CHAPTER 4 ~~PRESCRIPTIVE COMPLIANCE METHOD~~ (6<sup>TH</sup> Edition 2017)
- CHAPTER 4 REPAIRS (7<sup>TH</sup> EDITION 2020)
- CHAPTER 5 ~~CLASSIFICATION OF WORK~~ (6<sup>TH</sup> Edition 2017)
- CHAPTER 5 PRESCRIPTIVE COMPLIANCE METHOD (7<sup>TH</sup> Edition 2020)
- CHAPTER 6 REPAIRS (6<sup>TH</sup> Edition 2017)
- CHAPTER 6 CLASSIFICATION OF WORK (7<sup>TH</sup> Edition 2020)

Note: These major "renumbering" type changes usually have unforeseen consequences!

**2017 Florida Building Code - Existing Building, Sixth Edition**

## CHAPTER 5 CLASSIFICATION OF WORK

## SECTION 502

## REPAIRS

## 502.1 Scope.

Repairs, as defined in Chapter 2, include the patching or restoration or replacement of damaged materials, elements, equipment or fixtures for the purpose of maintaining such components in good or sound condition with respect to existing loads or performance requirements.

## 502.2 Application.

Repairs shall comply with the provisions of Chapter 6. Reroofing shall comply with the provisions of Section 706.

## 502.3 Related work.

Work on nondamaged components that is necessary for the required repair of damaged components shall be considered part of the repair and shall not be subject to the provisions of Chapter 7, 8, 9, 10 or 11.

NOTE: HIGHLIGHTED SECTIONS NOT IN 2020 FBC EXISTING BUILDING

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Existing Building

R9856

44

Date Submitted	01/06/2022	Section	706	Proponent	Michael Silvers (FRSA)
Chapter	7	Affects HVHZ	No	Attachments	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Changes term roof to roof covering in number 5. of. 706.3 Recovering versus replacement. Clarifies the intent. Attachment to the roof deck is permissible during a recovery. Roof has been interpreted to mean the roof assembly which includes the deck. See binding interpretation 186 attached.

### Rationale

Changing the term "roof" to "roof covering" will clarify the intent of this paragraph. Attachment to the deck is acceptable when performing a recovery. The term "roof" has been interpreted to mean roof assembly that includes the deck. The code doesn't provide a definition for "roof". This section was intended to apply primarily when adhering a new roof system to an existing roof covering that doesn't meet current uplift resistance requirements. See Binding Interpretation 186 attached.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

None. Clarifies the section by substituting a term defined in the code.

#### Impact to building and property owners relative to cost of compliance with code

No impact

#### Impact to industry relative to the cost of compliance with code

No impact

#### Impact to small business relative to the cost of compliance with code

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Will clarify intent and interpretation of the code.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Will clarify intent and interpretation of the code.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

[BS]706.3 Recovering versus replacement.

New roof coverings shall not be installed without first removing all existing layers of roof coverings down to the roof deck where any of the following conditions occur:

1. Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
2. Where the existing roof covering is wood shake, slate, clay, cement or asbestos-cement tile.
3. Where the existing roof has two or more applications of any type of roof covering.
4. When blisters exist in any roofing, unless blisters are cut or scraped open and remaining materials secured down before applying additional roofing.
5. Where the existing roof covering is to be used for attachment for a new roof system and compliance with the securement provisions of Section 1504.1 of the Florida Building Code, Building cannot be met.

-





## **Florida Building Code Binding Interpretation**

### **Report Number 186**

**Date: July 7, 2020**

**Report: 186**

**Code Edition: 6<sup>th</sup> Edition (2017)**

**Florida Building Code, Existing Building Section 706.3**

#### **Text of code provisions:**

**[BS] 706.3 Recovering versus replacement.** New roof coverings shall not be installed without first removing all existing layers of roof coverings down to the roof deck where any of the following conditions occur:

1. Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
2. Where the existing roof covering is wood shake, slate, clay, cement or asbestos-cement tile.
3. Where the existing roof has two or more applications of any type of roof covering.
4. When blisters exist in any roofing, unless blisters are cut or scraped open and remaining materials secured down before applying additional roofing.
5. Where the existing roof is to be used for attachment for a new roof system and compliance with the securement provisions of Section 1504.1 of the *Florida Building Code, Building* cannot be met.

#### **Appeal question(s) requesting a response:**

- Is recovering of an existing shingle roof as noted [in Fl. Existing Building Code Sec 706.3] [an] acceptable means?
- Does] the code restrict the ability of a homeowner to recover [existing shingle roof] even when section 1504 is not

met due to the roof not being removed?

- Since the [existing] shingles are not being removed, [is] recovering allowed?

**Answers:**

- Yes
- No, subject to the criteria listed in paragraphs 1-5 in FBC, Existing Buildings Sec 706.3
- Yes

**Comment:** FBC, Existing Buildings Sec 706.3, paragraph 5 is a condition that does not apply because the existing roof is not being used for attachment for a “new roof system”. A “new roof system” has been interpreted as a new roof assembly and is not specifically defined in the Code, which has created confusion in the interpretation of this provision. If it was intended that paragraph 5 be met including the provisions for wind load attachments in FBC Section 1504 then it will not be possible to perform any reroofing over an existing shingle roof and would thereby render FBC, Existing Buildings Sec 706.3 Recovering versus replacement void and of no effect. This is clearly not the intent of this Code section.

**NOTICE:**

The Building Officials Association of Florida, in cooperation with the Florida Building Commission, and the Florida Department of Business & Professional Regulation, provides this interpretation of the Florida Building Code in the interest of consistency and application of the Building Code statewide. This interpretation is binding and not subject to acceptance and approval by the local building official.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Existing Building

**R9870**

45

Date Submitted	01/07/2022	Section	706.1.1	Proponent	Michael Silvers (FRSA)
Chapter	7	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

The modification facilitates changing the term replaced to reroofed in this paragraph. The existing language has been interpreted to prohibit recovering more than 25% of a roof or roof section which is not the intent of this section.

### Rationale

The modification facilitates changing the term replaced to reroofed in this paragraph. The existing language has been interpreted to prohibit recovering more than 25% of a roof or roof section which is not the intent of this section. This change will not alter current practices, but will eliminate unintended restrictions being placed on recovering more than 25% of a roof. There is currently no definition of roof system in the code.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact

**Impact to building and property owners relative to cost of compliance with code**

No impact

**Impact to industry relative to the cost of compliance with code**

No impact

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

By clarify intent and thereby the correct interpretation of the code

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

By clarify intent and thereby the correct interpretation of the code

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate

**Does not degrade the effectiveness of the code**

Does not degrade

Not more than 25 percent of the total roof area or roof section of any existing building or structure shall be repaired, replaced or recovered in any 12-month period unless the roof covering on the entire existing ~~roofing system~~ roof or roof section is ~~replaced~~ reroofed to conform to the requirements of this code.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Existing Building

**R9883**

46

Date Submitted	01/11/2022	Section	706.1.1	Proponent	Michael Silvers (FRSA)
Chapter	7	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Adds an exclusion the 706.1.1 often referred to the 25% rule. Currently it requires the balance of the undamaged roof or roof section to be replaced without regard for the remaining serviceable life of the the undamaged portion. The exclusion would allow roofs up to 9 years old to remain in use.

### Rationale

Current language requires replacement of the entire roof systems when repairing replacing and recovering more than 25% of a roof or roof section. It does not take into account the age of the existing roof. This leads to many roofs being completely replaced with years of serviceable life remaining. The cost to replace these compliant when installed and currently undamaged roof areas fall to the owner or most often their insurer. Some reasonable consideration of remaining serviceable life should be allowed. By using the applicable code edition when the roof was permitted and installed the exclusion will not require roofs up to 9 years to be replaced.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact.

#### Impact to building and property owners relative to cost of compliance with code

Will reduce property owners and their insurers cost by not forcing replacement of serviceable portions of the roof. It will also reduce the cost of property insurance.

#### Impact to industry relative to the cost of compliance with code

No impact.

#### Impact to small business relative to the cost of compliance with code

### Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Will reduce property owners and their insurers cost by not forcing replacement of serviceable portions of the roof.  
It will also reduce the cost of property insurance.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Improves the code.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate

**Does not degrade the effectiveness of the code**

Does not degrade.



706.1.1 Not more than 25 percent of the total roof area or roof section of any existing building or structure shall be repaired, replaced or recovered in any 12-month period unless the entire existing roofing system or roof section is replaced to conform to requirements of this code.

Exception: Replacement of the entire existing roof or roof section is not required if the existing roof covering was permitted and installed in compliance with this code or the two previous versions of the Florida Building Code.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Existing Building

**R10016**

47

Date Submitted	02/01/2022	Section	706.7.2	Proponent	Michael Silvers (FRSA)
Chapter	7	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No** **Alternate Language No**

### Related Modifications

### Summary of Modification

Adds a reference to the appropriate section of the Building volume since this section no longer only applies to residential structures.

### Rationale

This section no longer applies to just residential structures the reference to the Building volume is now appropriate.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**  
Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

**706.7.2 Roof secondary water barrier for existing structures with wood roof decks.**

A secondary water barrier shall be installed using one of the following methods when roof covering is removed and replaced:

1. In High-Velocity Hurricane Zone regions:

- a) All joints in structural panel roof sheathing or decking shall be covered with a 4 inch (102 mm) to 6 inch (153 mm) wide strip of self-adhering polymer modified bitumen tape applied directly to the sheathing or decking. The deck and selfadhering polymer modified bitumen tape shall be covered with one of the underlayment systems approved for the particular roof covering to be applied to the roof.
- b) The entire roof deck shall be covered with an approved asphalt impregnated 30# felt underlayment or approved synthetic underlayment installed with nails and tin-tabs in accordance with Section 1518.2, 1518.3 or 1518.4 of the Florida Building Code, Building. (No additional underlayment shall be required over the top of this sheet.) The synthetic underlayment shall be fastened in accordance with the manufacturer's recommendations.

2. Outside the High-Velocity Hurricane Zone:

- a) Underlayment shall comply with Section 1507.1.1 of the Florida Building Code, Building or Section R905.1.1 of the Florida Building Code, Residential.

Exceptions:

- 1. Roof slopes  $< 2:12$  having a continuous roof system shall be deemed to comply with Section 706.7.2 requirements for a secondary water barrier.
- 2. Clay and concrete tile roof systems installed as required by the Florida Building Code are deemed to comply with the requirements of Section 706.7.2 for Secondary Water Barriers.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Existing Building

**R10179**

48

Date Submitted	02/14/2022	Section	706.7.2	Proponent	Michael Silvers (FRSA)
Chapter	7	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

10175, 10176, 10180 and 10238

### Summary of Modification

The modification eliminates the prescriptive language in this volume and section and instead directs the user to the proper underlayment sections of the code where additional options are available. This section will then indicate when a secondary water barrier is required.

### Rationale

The modification eliminates the prescriptive language in this sub-code and section and instead directs the user to the proper underlayment sections of the code where additional options are available. This section will then indicate only when a secondary water barrier is required.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not discriminate.

**706.7.2 Roof secondary water barrier for existing structures with wood roof decks.**

A secondary water barrier shall be installed using one of the following methods when roof covering is removed and replaced:

**1. In High-Velocity Hurricane Zone regions:**

~~a) All joints in structural panel roof sheathing or decking shall be covered with a 4 inch (102 mm) to 6 inch (153 mm) wide strip of self-adhering polymer-modified bitumen tape applied directly to the sheathing or decking. The deck and selfadhering polymer-modified bitumen tape shall be covered with one of the underlayment systems approved for the particular roof covering to be applied to the roof.~~

~~b) The entire roof deck shall be covered with an approved asphalt impregnated 30# felt underlayment or approved synthetic underlayment installed with nails and tin-tabs in accordance with Section 1518.2, 1518.3 or 1518.4 of the Florida Building Code, Building. (No additional underlayment shall be required over the top of this sheet.) The synthetic underlayment shall be fastened in accordance with the manufacturer's recommendations.~~

**2. Outside the High-Velocity Hurricane Zone:**

a) Underlayment shall comply with Section 1507.1.1.1 or 1518.2, of the Florida Building Code, Building, or Section R905.1.1 of the Florida Building Code, Residential.

**Exceptions:**

1. Roof slopes < 2:12 having a continuous roof system shall be deemed to comply with Section 706.7.2 requirements for a secondary water barrier.

2. Clay and concrete tile roof systems installed as required by the Florida Building Code are deemed to comply with the requirements of Section 706.7.2 for Secondary Water Barriers.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

**R10015**

49

Date Submitted	02/01/2022	Section	202	Proponent	Michael Silvers (FRSA)
Chapter	2	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No** **Alternate Language No**

### Related Modifications

Building Chapter 2 Definitions Building Chapter 15 Section 1502 Definitions

### Summary of Modification

Changes "Roof Covering System" to "Roof System" which is used throughout roofing sections. After "Roof Covering System" user is directed to "Roof Assembly". A Roof Assembly includes the deck where a "Roof Covering System" does not. Also clarifies definition of "Roof Assembly".

### Rationale

Changes the term "Roof Covering System" which is not regularly referred to in the code to "Roof System" which is used consistently throughout roofing sections of the code. Current direction after "Roof Covering System" states to see "Roof Assembly" which is not accurate. A Roof Assembly includes the deck where a Roof System does not. Also clarifies definition of "Roof Assembly".

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**



Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

*Previous definitions remain unchanged. Some unchanged definitions below are shown for clarity.*

**ROOF ASSEMBLY.** A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly includes the roof covering roof deck, and may include a vapor retarder, substrate or thermal barrier, insulation or similar substrate ~~and roof covering.~~

**ROOF COVERING.** The covering applied to the roof deck for weather resistance, fire classification or appearance.

~~**ROOF COVERING SYSTEM.** See “Roof assembly.”~~

**ROOF DECK.** The flat or sloped surface not including its supporting members or vertical supports.

**ROOF RECOVER.** The process of installing an additional roof covering over a prepared existing roof covering without removing the existing roof covering.

See also Section R202 of the *Florida Building Code, Energy Conservation*.

**ROOF REPAIR.** Reconstruction or renewal of any part of an existing roof for the purposes of its maintenance.

See also Section R202 of the *Florida Building Code, Energy Conservation*.

**ROOF REPLACEMENT.** The process of removing the existing roof covering, repairing any damaged substrate and installing a new roof covering.

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

**ROOFTOP STRUCTURE.** An enclosed structure on or above the roof of any part of a building

**ROOF SYSTEM.** A roof system consists of a roof covering and other interacting roofing components and may include vapor retarder, thermal barrier, insulation or other similar substrate. The system does not include the roof deck unless it is part of a single component serving as the roof covering and the roof deck.

*Remaining definitions remain unchanged*

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

R9884

50

Date Submitted	01/10/2022	Section	905	Proponent	Aaron Phillips
Chapter	9	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments Yes**

**Alternate Language No**

**Related Modifications**

9882

### Summary of Modification

Modify deck joint tape width for D1970 materials.

### Rationale

There is no technical basis to require a different deck joint tape width for tapes complying with AAMA 711 versus tapes that comply with ASTM D1970. This modification revises the minimum width requirement for ASTM D1970 tapes to 3 ¾ inches to match the requirement for those that comply via AAMA 711. Also, it removes ambiguity caused by references to both 3 ¾-inch and 4-inch wide tape within the same paragraph.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact to local entity enforcement.

**Impact to building and property owners relative to cost of compliance with code**

Cost of compliance should not change.

**Impact to industry relative to the cost of compliance with code**

Cost of compliance should not change.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Removes ambiguity about deck joint tape requirements.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Removes ambiguity about deck joint tape requirements.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Corrects an existing discriminating code provision to create equivalent requirements for materials performing the same function.

**Does not degrade the effectiveness of the code**

Does not degrade the effectiveness of the code.

## 1st Comment Period History

R9884-G1	Proponent	Ken Hix	Submitted	4/14/2022 2:39:02 PM	Attachments	No
	Comment: 3-3/4 (96mm) wide tape is referred to in this proposal. 3.75 inches is actually 95.25mm. We believe the 96mm to just be a rounding error caused by the various conversion calculators available online. There are multiple tapes on the market that are labelled 3-3/4 inch(95mm) so this could create an issue for some commonly used tapes. A simple editorial revision to 3-3/4 inch (95mm) will resolve this concern.					

**Revise as shown:****R905.1.1.1 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, renailling off the roof sheathing in accordance with Section R908.7.1 can be confirmed or verified. An approved underlayment in accordance with Table R905.1.1.1 for the applicable roof covering shall be applied over the entire roof over the existing self-adhered modified bitumen underlayment.

2. A minimum 3 3/4-inch-wide (96 mm) ~~4-inch-wide (102 mm)~~ strip of self-adhering 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 R905.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 3 3/4-inch-wide (96 mm) ~~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 3 3/4-inch-wide (96 mm) ~~4-inch-wide (102 mm)~~ membrane strips. This underlayment shall be installed and attached in accordance with the underlayment attachment methods of Table R905.1.1.1 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 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 R905.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 3 3/4-inch-wide (96 mm) ~~4-inch-wide (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 3 3/4-inch-wide (96 mm) ~~4-inch-wide (102 mm)~~ flashing strips. This underlayment shall be installed and attached in accordance with the underlayment attachment methods of Table R905.1.1.1 for the applicable roof covering and slope and the underlayment manufacturer's installation instructions.

[REMAINDER OF SECTION R905.1.1.1 UNCHANGED]

**Revise as shown:**

**R905.1.1.3 Underlayment for wood shakes and shingles.** Underlayment for wood shakes and shingles shall comply with one of the following methods:

1. A minimum 3 3/4-inch-wide (96 mm) ~~4-inch-wide (102 mm)~~ strip of self-adhering 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 R905.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 3 3/4-inch-wide (96 mm) ~~4-inch-wide (102 mm)~~ membrane strips.

2. A minimum 3 3/4-inch-wide (96 mm) strip of 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 underlayment complying with Table R905.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 3 3/4-inch-wide (96 mm) ~~4-inch-wide (102 mm)~~ flashing strips.

[REMAINDER OF SECTION R905.1.1.3 UNCHANGED]

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

R9887

51

Date Submitted	01/10/2022	Section	905	Proponent	Aaron Phillips
Chapter	9	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

9885

### Summary of Modification

Remove provision for printed instructions.

### Rationale

Manufacturer instructions are increasingly made available in media other than “printed” versions. This proposal removes the word “printed” from the only instance in the FBC-Residential Chapter 9 where it is used in conjunction with “instructions.” Removal of the word “printed” will permit alternative methods for providing instructions, including digital formats that support greater sustainability. The proposed change also is important in light of events such as the COVID-19 pandemic, which brought attention to the need to be able to deliver information using alternative methods.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement.

#### Impact to building and property owners relative to cost of compliance with code

Cost of compliance should not change.

#### Impact to industry relative to the cost of compliance with code

Cost of compliance should not change.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Provides opportunity for more efficient use of limited resources by permitting alternative means to provide manufacturer instructions.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Clears the way for improved and more efficient means to deliver manufacturer instructions.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

The only roof covering type with code provisions requiring "printed" instructions is asphalt shingles.

This proposal removes that material specific requirement.

**Does not degrade the effectiveness of the code**

Does not degrade the effectiveness of the code.



**Revise as shown:**

**R905.2.8.4 Other flashing.** Flashing against a vertical front wall, as well as soil stack, vent pipe and chimney flashing, shall be applied in accordance with the asphalt shingle manufacturer's ~~printed~~ instructions.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

**R9890**

52

Date Submitted	01/24/2022	Section	905.3	Proponent	Michael Silvers (FRSA)
Chapter	9	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

Residential Chapter 46 Building Code 1507.3 Building Code Chapter 35

### Summary of Modification

This modification updates Referenced Standard FRSA/TRI High Wind Concrete and Clay Roof Tile Manual from the Sixth to the Seventh Edition

### Rationale

This modification updates Referenced Standard FRSA/TRI High Wind Concrete and Clay Roof Tile Manual from the Sixth to the Seventh Edition. The manual is being updated to comply with ASCE 7-22

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

**R905.3 Clay and concrete tile.**

The installation of clay and concrete tile shall be in accordance with the manufacturer's installation instructions, or recommendations of FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition where the Vasd is determined in accordance with Section R301.2.1.3 or the recommendations of RAS 118, 119 or 120.

**R905.3.1 Deck requirements.**

Concrete and clay tile shall be installed only over solid sheathing, except where the roof covering is specifically designed and tested in accordance with Chapter 16, Florida Building Code, Building to be applied over spaced structural sheathing boards.

**R905.3.2 Deck slope.**

Clay and concrete roof tile shall be installed on roof slopes in accordance with the recommendations of FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition where the Vasd is determined in accordance with Section R301.2.1.3 or the recommendations of RAS 118, 119 or 120.

**R905.3.3 Underlayment.**

Required underlayment shall comply with the underlayment manufacturer's installation instructions in accordance with the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition where the Vasd is determined in accordance with Section R301.2.1.3 or the recommendations of RAS 118, 119 or 120.

**R905.3.3.1 Slope and underlayment requirements.**

Refer to manufacturer's installation instructions, FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition where the Vasd is determined in accordance with Section R301.2.1.3 or RAS 118, 119 or 120 for underlayment and slope requirements for specific roof tile systems.

**R905.3.4 Clay tile.**

Clay roof tile shall comply with ASTM C1167.

**R905.3.5 Concrete tile.**

Concrete roof tile shall comply with ASTM C1492.

**R905.3.6 Fasteners.**

Nails shall be corrosion resistant and not less than 11 gage, 5/16-inch (11 mm) head, and of sufficient length to penetrate the deck not less than 3/4 inch (19 mm) or through the thickness of the deck, whichever is less or in accordance with the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition where the Vasd is determined in accordance with Section R301.2.1.3 or in accordance with the recommendations of RAS 118, 119 or 120. Attaching wire for clay or concrete tile shall not be smaller than 0.083 inch (2.1 mm).

**R905.3.7 Application.**

Tile shall be applied in accordance with this chapter and the manufacturer's installation instructions, recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition or the recommendations of RAS 118, 119 or 120.

**Table R905.3.7 Clay and Concrete Tile Attachment. Reserved.**

**R905.3.7.1 Hip and ridge tiles.**

Hip and ridge tiles shall be installed in accordance with FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition where the Vasd is determined in accordance with Section R301.2.1.3 or the recommendations of RAS 118, 119 or 120.

**R905.3.8 Flashing.**

At the juncture of roof vertical surfaces, flashing and counterflashing shall be provided in accordance with this chapter and the manufacturer's installation instructions, recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition where the Vasd is determined in accordance with Section R301.2.1.3 or the recommendations of RAS 111, 118, 119 or 120.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

**R9894**

53

Date Submitted	01/12/2022	Section	902	Proponent	Aaron Phillips
Chapter	9	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments** No

**Alternate Language** No

### Related Modifications

### Summary of Modification

Clarify fire classification section.

### Rationale

Two issues are corrected by this MOD. First, it replaces the undefined term “roofing” with “roof assemblies” because it is the roof assembly that is tested and classified. Second, it replaces the final sentence with two new ones. The final sentence implies that ONLY if the material is required to be listed shall it be tested. That is neither the intent nor the practice. The proposed language first establishes the requirements for testing and then the requirements for listing. Testing continues to be triggered by the jurisdiction or proximity to a lot line.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

Cost of compliance should not change because there are no technical changes in provisions.

#### Impact to industry relative to the cost of compliance with code

Cost of compliance should not change because there are no technical changes in provisions.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Improves clarify of the fire classification provisions of the code.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves clarify of the fire classification provisions of the code.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade code effectiveness. Clarifies the fire classification provisions.

**Revise as shown:**

**R902.1 Roofing covering materials.** Roofs shall be covered with materials as set forth in Sections R904 and R905. Class A, B or C *roof assemblies* ~~roofing~~ shall be installed in jurisdictions designated by law as requiring their use or where the edge of the roof is less than 3 feet (914 mm) from a lot line. Where Class A, B, or C *roof assemblies* are required, they shall be tested in accordance with ASTM E108 or UL 790. Where required, the *roof assembly* shall be listed and identified as to Class by an approved testing agency. ~~Class A, B and C roofing required by this section to be listed shall be tested in accordance with UL 790 or ASTM E108.~~

**Exceptions:**

1. Class A roof assemblies include those with coverings of brick, masonry and exposed concrete roof deck.
2. Class A roof assemblies include ferrous or copper shingles or sheets, metal sheets and shingles, clay or concrete roof tile, or slate installed on noncombustible decks.
3. Class A roof assemblies include minimum 16 ounces per square foot copper sheets installed over combustible decks.



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

R9897

54

Date Submitted	01/12/2022	Section	905	Proponent	Aaron Phillips
Chapter	9	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Clarify asphalt shingle wind resistance provisions.

### Rationale

This MOD clarifies the wind resistance requirements of asphalt shingles by: (1) indicating the reference standards are for testing as well as classification, (2) pointing to Table R905.2.6.1 for the classification required for the applicable wind speed from Figure R301.2(4), (3) removing the sentence description of the classifications—which includes an incorrectly stated limitation of D7158 Glass G to Vasd of 100 mph—to simplify and make future maintenance easier, and (4) stipulating that “labeled” is a defined term. In addition, the proposal changes the title of Sections R905.2.4.1 and R905.2.6.1 to align with their respective content.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact on local entity enforcement of code. Clarifies existing requirements.

#### Impact to building and property owners relative to cost of compliance with code

No impact on cost of compliance. Does not change existing technical requirements.

#### Impact to industry relative to the cost of compliance with code

No impact on cost of compliance. Does not change existing technical requirements.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Provides a more accurate expression of existing code requirements, ensuring proper interpretation of wind resistance provisions.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Clarifies existing provisions to improve understanding and application.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Improves effectiveness by more accurately expressing existing code requirements.

Revise as shown:

**R905.2.4.1 Wind-resistance Installation of asphalt shingles.** Asphalt shingles shall be installed in accordance with Sections R905.2.6 and R905.2.6.1.

**R905.2.6.1 Classification Wind resistance of asphalt shingles.** Asphalt shingles shall be ~~tested and~~ classified in accordance with ASTM D3161, TAS 107 or ASTM D7158 and shall meet the required classification in accordance with Table R905.2.6.1 to resist the basic wind speed per Figure R301.2(4). ~~Shingles classified as ASTM D3161 Class D or classified as ASTM D7158 Class G are acceptable for use where  $V_{\text{wind}}$  is equal to or less than 100 mph. Shingles classified as ASTM D3161 Class F, TAS 107 or ASTM D7158 Class H are acceptable for use for all wind speeds.~~ Asphalt shingle wrappers shall be ~~labeled~~ labeled to indicate compliance with one of the required classifications, as shown in Table R905.2.6.1.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

R9902

55

Date Submitted	01/13/2022	Section	905	Proponent	Aaron Phillips
Chapter	9	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Address width of D1970 valley liner.

### Rationale

Although implied, the minimum width of ASTM D1970 valley lining is not provided in the existing language of the FBC-Residential. This proposal clarifies that underlayment complying with ASTM D1970 that is used as valley lining must be at least 36" wide.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement.

#### Impact to building and property owners relative to cost of compliance with code

It is unlikely D1970 liners narrower than 36" are being used. However, in any case where a liner less than 36" wide was planned, an increase in cost might occur. The benefit is a more water-resistant valley construction.

#### Impact to industry relative to the cost of compliance with code

Cost of compliance with code is not expected to change.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Removes ambiguity about minimum width of D1970 underlayment used in a closed valley construction.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Removes ambiguity about minimum width of D1970 underlayment used in a closed valley construction.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

**Does not degrade the effectiveness of the code**

Improves effectiveness of the code by addressing a gap in provisions.

**Revise as shown:**

**R905.2.8.2 Valleys.** Valley linings shall be installed in accordance with the manufacturer's instructions before applying shingles. Valley linings of the following types shall be permitted:

1. For open valleys (valley lining exposed) lined with metal, the valley lining shall be not less than 16 inches (406 mm) wide and of any of the corrosion-resistant metals in Table R903.2.1.
2. For open valleys, valley lining of two plies of mineral-surfaced roll roofing, complying with ASTM D3909 or ASTM D6380 Class M, shall be permitted. The bottom layer shall be 18 inches (457 mm) and the top layer not less than 36 inches (914 mm) wide.
3. For closed valleys (valley covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D6380 Class S and not less than 36 inches wide (914 mm) or valley lining as described in Item 1 or 2 shall be permitted. Self-adhering polymer modified bitumen underlayment complying with ASTM D1970 and not less than 36 inches (914 mm) wide shall be permitted in lieu of the lining material.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

**R9989**

56

Date Submitted	02/01/2022	Section	905.3.3	Proponent	Michael Silvers (FRSA)
Chapter	9	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

Building Chapter 15 Section 1507.3 Underlayment

### Summary of Modification

Adds an exception for tile roof coverings over an existing self-adhering modified bitumen underlayment similar to the one in R905.1.1.1 – 1. for other steep slope roof coverings.

### Rationale

Existing self-adhering underlayments are being encountered during reroofing. A method to install new mechanically attached underlayments over the self-adhering underlayment was added to the code as an exception to 1507.1.1.1 - 1. to address other steep slope roof coverings. This very similar exception addresses tile roof coverings in the same manner.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.



**905.3.3 Underlayment.** Unless otherwise noted, required underlayment shall comply with the underlayment manufacturer's installation instructions in accordance with the recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the Vasd, is determined in accordance with Section R301.2.1.3 or the recommendations of RAS 118, 119 or 120.

Exception: Where an existing self-adhering modified bitumen underlayment that has been previously installed over the roof decking and, where it is required, reroofing of 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 a two-ply system as described in the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition shall be applied over the entire roof over the existing self-adhered modified bitumen underlayment.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

**R9991**

57

Date Submitted	02/01/2022	Section	905.2.8.5	Proponent	Michael Silvers (FRSA)
Chapter	9	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

Building Chapter 15 Section 1507

### Summary of Modification

Eliminates option to install the drip edge at eave under the underlayment except when using a self-adhering underlayment.

### Rationale

Allowing the underlayment to be installed over the drip edge at the eaves offers no resistance to wind uplift and little resistance to water intrusion. This change uses the existing gable language for both eaves and gables (rakes). It does allow self-adhering underlayment to be installed over the primed drip edge flange.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**  
Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

**R905.2.8.5 Drip edge.** Provide drip edge at eaves and gables of shingle roofs. Overlap is to be a minimum of 3 inches (76 mm). Eave drip edges shall extend 1/2 inch (13 mm) below sheathing and extend back on the roof a minimum of 2 inches (51 mm). Drip edge at gables shall be installed over the underlayment. ~~Drip edge at eaves be permitted to be installed either over or under the underlayment. If installed over the underlayment, Self-adhering underlayment may be installed over a primed drip edge flange.~~ There shall be a minimum 4 inches (51 mm) width of roof cement installed over the drip edge flange or the self-adhering underlayment. Drip edge shall be mechanically fastened a maximum of 12 inches (305 mm) on center. Where the Vasd, as determined in accordance with Section 1609.3.1, is 110 mph (177 km/h) or greater or the mean roof height exceeds 33 feet (10 058 mm), drip edges shall be mechanically fastened a maximum of 4 inches (102 mm) on center.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

**R10066**

58

Date Submitted	02/02/2022	Section	905.3	Proponent	Michael Silvers (FRSA)
Chapter	9	Affects HVHZ	No	Attachments	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

Building Chapter 15 Roof Assemblies Section 1507.3

### Summary of Modification

Removes references to Miami/Dade Roofing Application Standards (RAS) 118, 119 or 120 for tile roofs from standard (Non HVHZ) sections of the roofing chapters.

### Rationale

Prescriptive methods described in the tile related RAS and TAS standards have been called into question. Underlayment applications described in the standards when tested using currently available performance testing standards indicate that some of the underlayment material and the fastener placement and density do not meet the current wind uplift resistance requirements based on ASCE-7. Test results from testing commissioned by FRSA using these proposed test standards are attached and indicate very low resistance to uplift pressures for systems described in the RAS and TAS. The numbers shown in Test 2 are before applying the safety factor of two that further reduces the listed uplift resistance of the underlayment. Independent testing by manufacturers of underlayment components produced similar results. The uplift resistance shown in many product approvals also confirms the need for these changes

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

### R905.3 Clay and concrete tile.

The installation of clay and concrete tile shall be in accordance with the manufacturer's installation instructions, or recommendations of FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the Vasd is determined in accordance with Section R301.2.1.3 ~~or the recommendations of RAS 118, 119 or 120.~~

#### R905.3.2 Deck slope.

Clay and concrete roof tile shall be installed on roof slopes in accordance with the recommendations of FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the Vasd is determined in accordance with Section R301.2.1.3 ~~or the recommendations of RAS 118, 119 or 120.~~

#### R905.3.3 Underlayment.

Required underlayment shall comply with the underlayment manufacturer's installation instructions in accordance with the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the Vasd is determined in accordance with Section R301.2.1.3 ~~or the recommendations of RAS 118, 119 or 120.~~

##### R905.3.3.1 Slope and underlayment requirements.

Refer to manufacturer's installation instructions, FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the Vasd is determined in accordance with Section R301.2.1.3 ~~or RAS 118, 119 or 120~~ for underlayment and slope requirements for specific roof tile systems.

#### R905.3.6 Fasteners.

Nails shall be corrosion resistant and not less than 11 gage, 5/16-inch (11 mm) head, and of sufficient length to penetrate the deck not less than 3/4 inch (19 mm) or through the thickness of the deck, whichever is less or in accordance with the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the Vasd is determined in accordance with Section R301.2.1.3 ~~or in accordance with the recommendations of RAS 118, 119 or 120.~~ Attaching wire for clay or concrete tile shall not be smaller than 0.083 inch (2.1 mm).

#### R905.3.7 Application.

Tile shall be applied in accordance with this chapter and the manufacturer's installation instructions, recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition ~~or the recommendations of RAS 118, 119 or 120.~~

##### R905.3.7.1 Hip and ridge tiles.

Hip and ridge tiles shall be installed in accordance with FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the Vasd is determined in accordance with Section R301.2.1.3 ~~or the recommendations of RAS 118, 119 or 120.~~

#### R905.3.8 Flashing.

At the juncture of roof vertical surfaces, flashing and counterflashing shall be provided in accordance with this chapter and the manufacturer's installation instructions, recommendations of the FRSA/TRI Florida High Wind Concrete and Clay Roof Tile Installation Manual, Sixth Edition where the Vasd is determined in accordance with Section R301.2.1.3 ~~or the recommendations of RAS 111, 118, 119 or 120.~~



## PRI Construction Materials Technologies LLC

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### Laboratory Test Report

<b>Report for:</b>	Mike Silvers FRSA 3855 N. Econlockhatchee Trail Orlando, FL 32817	
<b>Product Name:</b>	Self-adhered underlayment applied to ASTM D226 anchor sheet	
<b>Project No.:</b>	2368T0002	
<b>Dates Tested:</b>	May 10, 2021	
<b>Test Methods:</b>	UL 1897-12	
<b>Purpose:</b>	Determine uplift resistance in accordance with <b>UL 1897-12 Uplift Tests for Roof Covering Systems.</b>	
<b>Test Methods:</b>	Testing was completed as described in UL 1897-12 <i>Uplift Tests for Roof Covering Systems</i> . Specimens were incrementally loaded in accordance with UL 1897 until failure.	
<b>Deck Description:</b>	<b>Framing:</b>	2x10 No. 2 SYP lumber installed 24" o.c.
	<b>Deck:</b>	15/32 APA rated plywood sheathing installed over No. 2 lumber supports spaced 24" on center. Decking was attached with 2-3/8 inch x 0.113 inch ring shank nails spaced 6" o.c. along the perimeter and intermediate supports.
	<b>Underlayment:</b>	An anchor sheet of ASTM D226 type II material was mechanically attached to sheathed specimen with 12ga, 1-1/4 inch long, galvanized, ring shank, roofing nails placed through 32ga, 1-5/8 inch diameter tin caps (see Results Table for spacing details). A self-adhering underlayment was applied atop the mechanically attached anchor sheet in accordance with manufacturer's installation instructions. The laps of the self-adhered underlayment were backnailed with 12ga, 1-1/4 inch long, galvanized, ring shank, roofing nails placed through 32ga, 1-5/8 inch diameter tin caps and spaced 12 inches on center along the lap.

#### 2368T0002.1

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Underlayment application  
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**Results:**

Table 1. Summary of Test Results

Specimen No.	Underlayment	Attachment	Passing Uplift Pressure (psf)	Failure Mode
1	2 / A	Fastened in lap 6 in o.c. 2 rows in the field @ 12 in o.c.	30	Fastener Pull-through
2	2 / A	Fastened in lap 6 in o.c. 3 rows in the field @ 8 in o.c.	45	Fastener Pull-through
3	2 / A	Plywood joints taped <sup>1</sup> Fastened in lap 6 in o.c. 3 rows in the field @ 8 in o.c.	60	Fastener Pull-through
4	2 / D	Fastened in lap 6 in o.c. 2 rows in the field @ 12 in o.c.	30	Fastener Pull-through
5	2 / D	Fastened in lap 6 in o.c. 3 rows in the field @ 8 in o.c.	60	Fastener Pull-through

Notes: 1 - Specimen #3 construction details included taping of the plywood joints with AAMA 711 compliant seam tape.

**Statement of Attestation:**

Testing was conducted in accordance with **UL 1897-12 Uplift Tests for Roof Covering Systems**. The test results and interpretations presented herein are representative of the materials supplied by the client.

Signed: \_\_\_\_\_

  
Jason Simmons  
Director

**Report Issue History:**

Issue #	Date	Pages	Revision Description (if applicable)
Original	07/07/2021	8	NA
Revision	07/14/2021	7	Remove product identification

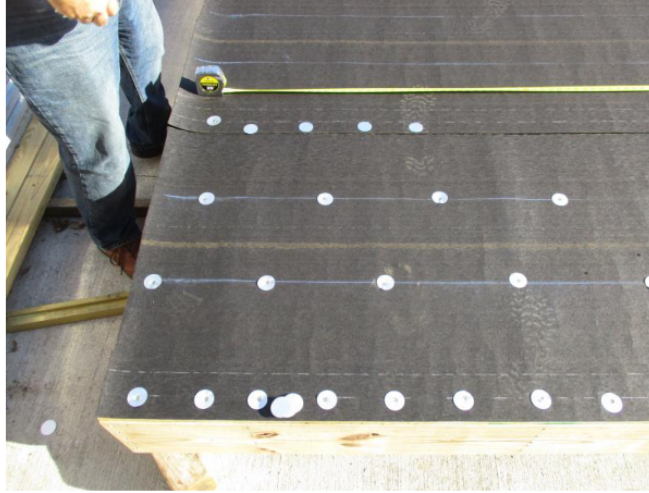
**APPENDIX ATTACHED**

**Appendix A: Representative Photographs**

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**Specimen #1 (typ.): Layout 6" OC in Lap and 2 rows at 12" OC in the field**



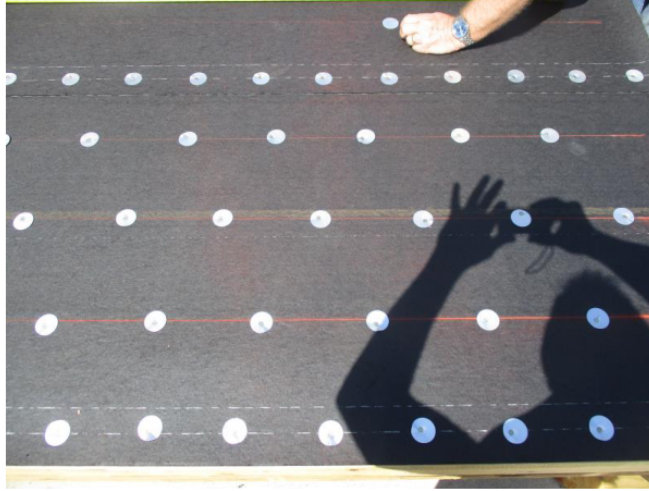
**Specimen #1 failure – fastener pull-through**

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**Specimen #2 (typ.): Layout 6" OC in Lap and 3 rows at 8" OC in the field**



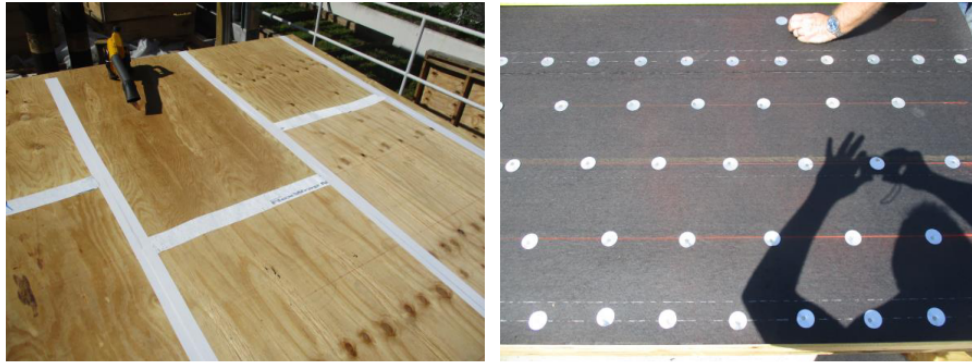
**Specimen #2 failure – fastener pull-through**

#### 2368T0002.1

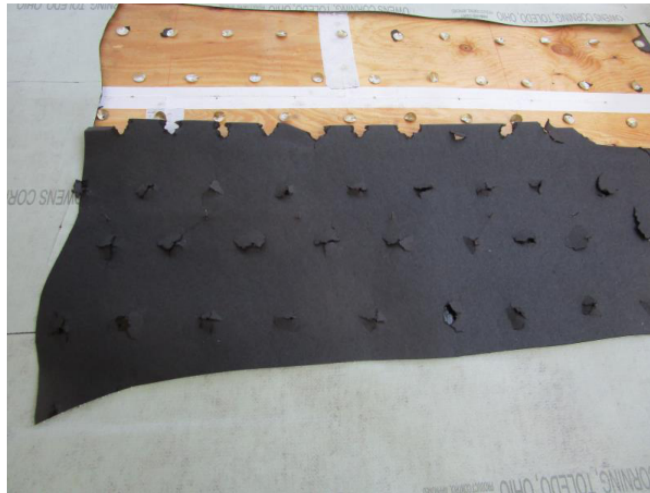
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**Specimen #3 (typ.): Layout 6" OC in Lap and 3 rows at 8" OC in the field over taped plywood joints**



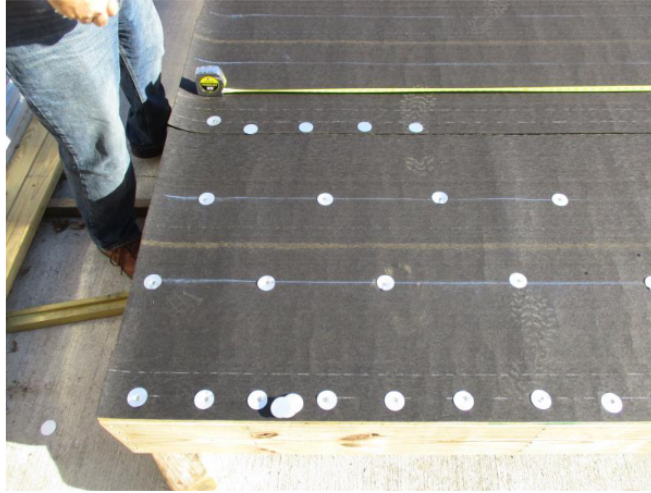
**Specimen #3 failure – fastener pull-through**

2368T0002.1

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**Specimen #4 (typ.): Layout 6" OC in Lap and 2 rows at 12" OC in the field**



**Specimen #4 failure – fastener pull-through**

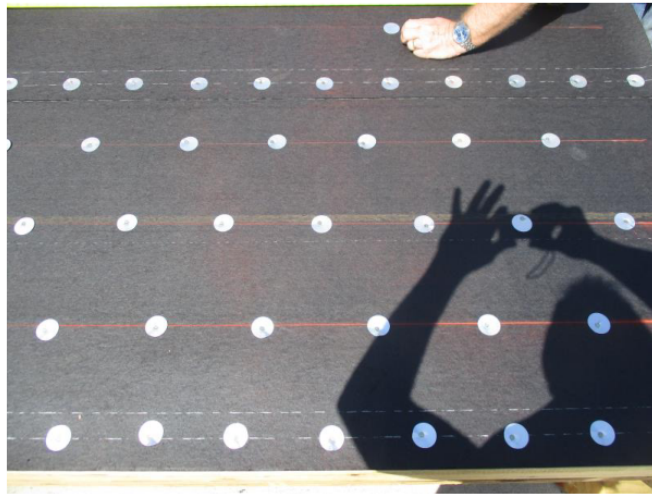
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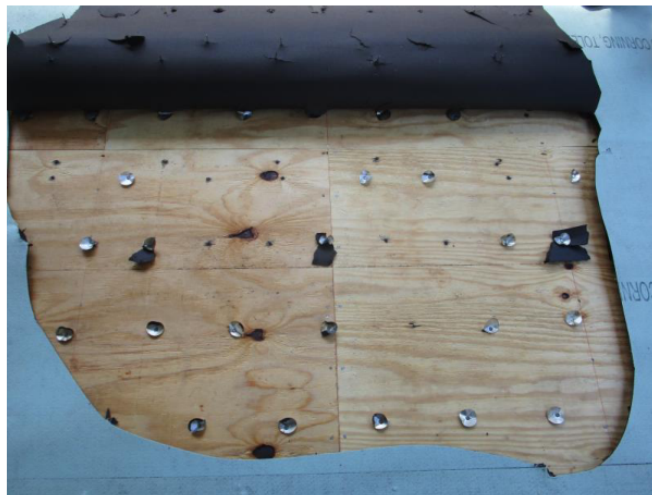
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**Specimen #5 (typ.): Layout 6" OC in Lap and 3 rows at 8" OC in the field**



**Specimen #5 failure – fastener pull-through**

**END OF REPORT**

2368T0002.1

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**PRI Construction Materials Technologies LLC**

6412 Badger Drive

Tampa, FL 33610

813.621.5777

<https://www.pri-group.com/>**Test Status Email**

**Report for:** Mike Sivers  
FRSA  
3855 N. Econlockhatchee Trail  
Orlando, FL

**Product Name:** Various D226 30# underlayments and various self-adhering underlayments

**Project No.:** 2368T0001

**Dates Tested:** April 1, 2021 – April 2, 2021

**Test Methods:** ASTM D1876 T-peel  
TAS 117 (B) fastener pull-through

**Results Summary:** *See Results table herein*

Mike,

Per your request, PRI completed resistance to T-peel between PSU30 and four (4) different ASTM D226, 30# underlayments. Identifying the 30# with which the PSU30 adhered the best, we completed testing for adhesion between that underlayment and the other three (3) self adhered products.

Additionally, we completed fastener pull-through testing in accordance with TAS 117 (B) for the four 30# underlayments.

The results of testing can be found herein in the following two results tables.

Please pass this on to your counterparts in preparation for the assembly work next week.

Feel free to call or email with any questions:

-Jason

2368T0001

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FRSA  
ASTM D1876 and TAS 117 (B) for  
30# anchor sheets and sa underlayments  
Page 2 of 3

## ASTM D1876 T-Peel

Sample	Test Method	Results							
T-Peel Strength (lbf/in); 10 specimens; 1in x 12in; Test Rate @ 10in/min; Self adhered to anchor sheet	ASTM D1876								
1 / A		1	2	3	4	5	Avg.	St. Dev	
		1.18	1.01	1.01	1.46	0.88			
		6	7	8	9	10	Avg.	St. Dev	
		0.93	0.86	0.70	0.83	0.74			0.96
1 / B		1	2	3	4	5	Avg.	St. Dev	
		0.54	0.42	0.49	0.39	0.46			
		6	7	8	9	10	Avg.	St. Dev	
		0.73	0.40	0.41	0.49	0.50			0.48
1 / C		1	2	3	4	5	Avg.	St. Dev	
		0.36	0.26	0.37	0.35	0.35			
		6	7	8	9	10	Avg.	St. Dev	
		0.36	0.32	0.45	0.35	0.48			0.37
1 / D		1	2	3	4	5	Avg.	St. Dev	
		0.53	0.57	0.59	0.62	0.53			
		6	7	8	9	10	Avg.	St. Dev	
		0.58	0.47	0.56	0.53	0.45			0.54
2 / A		1	2	3	4	5	Avg.	St. Dev	
		1.00	1.10	1.06	1.26	1.16			
		6	7	8	9	10	Avg.	St. Dev	
		1.22	0.94	0.96	0.83	1.16			1.07
3 / A		1	2	3	4	5	Avg.	St. Dev	
		0.19	1.23	1.34	0.95	1.12			
		6	7	8	9	10	Avg.	St. Dev	
		0.92	0.82	0.88	0.80	1.32			1.05
4 / A		1	2	3	4	5	Avg.	St. Dev	
		0.40	0.35	0.45	0.41	0.55			
		6	7	8	9	10	Avg.	St. Dev	
		0.41	0.41	0.47	0.52	0.40			0.44

Notes: None

## 2368T0001

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FRSA  
 ASTM D1876 and TAS 117 (B) for  
 30# anchor sheets and sa underlayments  
 Page 3 of 3

TAS 117 (B) Fastener Pull-Through Resistance

Sample	Test Method	Results Maximum Load (lbf)									
Fastener Pull-Through Resistance (lbf) 14 specimens; 18" by 18"; Test Rate @ 2in/min	TAS 117 Appendix B										
A		1	2	3	4	5	6	7	Avg.	St. Dev	
		61.7	59.0	64.7	64.4	64.3	55.5	56.4			
		8	9	10	11	12	13	14			
		62.4	66.8	61.1	56.3	56.2	57.8	60.5			60.5
B		1	2	3	4	5	6	7	Avg.	St. Dev	
		41.0	51.0	56.0	49.1	49.6	46.8	53.7			
		8	9	10	11	12	13	14			
		40.9	52.6	36.2	44.8	44.5	45.9	44.7			46.9
C		1	2	3	4	5	6	7	Avg.	St. Dev	
		42.4	41.2	52.0	48.0	45.8	52.5	48.4			
		8	9	10	11	12	13	14			
		49.3	47.6	52.0	43.2	44.7	50.2	44.3			47.2
D		1	2	3	4	5	6	7	Avg.	St. Dev	
		81.9	84.9	91.9	86.8	83.9	83.7	80.9			
		8	9	10	11	12	13	14			
		82.9	78.6	83.5	82.4	89.7	86.8	83.9			84.4

Notes: None

## 2368T0001

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# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

**R10073**

59

Date Submitted	02/03/2022	Section	905.1.1	Proponent	Michael Silvers (FRSA)
Chapter	9	Affects HVHZ	No	Attachments	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments Yes**

**Alternate Language Yes**

### Related Modifications

Building Chapter 15 Section 1507 Requirements for Roof Coverings 1507.1.1 Underlayment

### Summary of Modification

Reduces repetitive language by combining several similar methods of application into one description. The actual methods of installation remain unchanged except the additional overlap required beyond half the width of full sheets to 2". (See a completed version of the section attached).

### Rationale

This section underwent numerous amendments during the last code cycle leaving it overly complex. The modification reduces repetitive and redundant language in this section by combining several similar methods of application into one description. The actual methods of installation remain unchanged except to change all additional overlap required beyond half the width of full sheets to 2". This change will highlight the similarities of underlayment requirements for most steep slope roof coverings while clarifying the few differences.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

## Alternate Language

### 1st Comment Period History

R10073-A1	<b>Proponent</b>	Greg Keeler	<b>Submitted</b>	4/16/2022 10:06:24 PM	<b>Attachments</b>	Yes
	Rationale: This modification provides clarity for fastening due to varying widths of synthetic underlayment. This modification has been discussed with the proponent.					

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

None

#### Impact to building and property owners relative to cost of compliance with code

None

#### Impact to industry relative to the cost of compliance with code

None

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate

#### Does not degrade the effectiveness of the code

Does not degrade

### 1st Comment Period History

R10073-G1	<b>Proponent</b>	Ken Hix	<b>Submitted</b>	4/14/2022 2:16:18 PM	<b>Attachments</b>	No
	Comment: 3-3/4-inch (96mm) wide tape is referred to in this proposal. 3.75 inches is actually 95.25mm so we believe this is a rounding error probably because of the various conversion programs available online. There are multiple tapes on the market labelled 3-3/4 inches (95mm) so this could create a problem for commonly used tapes. An editorial revision to 3-3/4-inch-wide (95mm) will solve this problem.					

## REQUIREMENTS FOR ROOF COVERINGS

### R905.1 Scope.

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

### R905.1.1 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, **or and** ASTM 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 R905.1.1.1, R905.1.1.2 or **R905.1.1.3** as applicable.

#### Exception:

1. Compliance with Section R905.1.1.1 is not required for structural metal panels that do not require a substrate or underlayment.

### R905.1.1.1 Underlayment for asphalt shingles, metal roof panels or shingles, mineral surfaced roll roofing, slate and slate-type shingles, wood shakes, wood shingles

Underlayment for asphalt shingles, metal roof panels or shingles, mineral surfaced roll roofing, slate and slate-type shingles, wood shakes, 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, re-nailing 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 R905.1.1.1 for the applicable roof covering shall be applied over the entire roof over the existing self-adhered modified bitumen underlayment.
2. A minimum 3-3/4-inch-wide (102 96 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 R905.1.1.1 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 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 underlayment, overlapping successive sheets half the width of a full sheet plus 2 inches. 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,  $V_{ult}$ , 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 3/4 inch into the roof sheathing.

TABLE R905.1.1.1 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 D 6757 ASTM D8257	Apply in accordance with Section R905.1.1.1, 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. 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. 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 o.c.
Metal Roof Shingles, Mineral-Surface Roll Roofing, Slate and Slate-type Shingles, Wood Shingles, Wood Shake	ASTM D226 Type II ASTM D4869 Type III or IV ASTM D8257		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.

hour = 0.447 m/s

**Modification****SECTION R905 REQUIREMENTS FOR ROOF COVERINGS****R905.1. Roof covering application.**

Roof coverings shall be applied in accordance with the applicable provisions of this section and the manufacturer's installation instructions. Unless otherwise specified in this section, roof coverings shall be installed to resist the component and cladding loads specified in Table R301.2 (2), adjusted for height and exposure in accordance with Table R301.3(3).

**R905.1.1 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 and ASTM 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 R905.1.1.1, R905.1.1.2 or 905.1.1.3 as applicable.

Exception: Compliance with Section R905.1.1.1 is not required for structural metal panels that do not require a substrate or underlayment.

**Table R905.1.1(1)**  
**Underlayment Types.**

Reserved.

**Table R905.1.1(2)**  
**Underlayment Application.**

Reserved.

**Table R905.1.1(3)**  
**Underlayment Attachment.**

Reserved.

**R905.1.1.1 Underlayment for asphalt shingles, metal roof panels or shingles, mineral surfaced roll roofing, slate and slate-type shingles, wood shakes, wood shingles**

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

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, reroofing 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 R905.1.1.1 for the applicable roof covering shall be applied over the entire roof over the existing self-adhered modified bitumen underlayment.



2. A minimum 4-3/4-inch-wide (102 mm) strip of self-adhering polymer-modified bitumen membrane complying with ASTM D1970 or 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 R905.1.1.1 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 R905.1.1.1 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 R905.1.1.1 for the applicable roof covering and slope and the underlayment manufacturer's installation instructions.~~

4.3. Two layers of ASTM D226 Type II or ASTM D4869 Type III or Type IV, or ASTM D8257 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, Vult, 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.

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 2" 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 u-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 R905.1.1.1 UNDERLAYMENT WITH SELF-ADHERING STRIPS OVER ROOF DECKING JOINTS**

ROOF COVERING	UNDERLAYMENT TYPE	UNDERLAYMENT ATTACHMENT
<b>Roof Slope 2:12 and Less Than 4:12</b>	<b>Roof Slope 4:12 and Greater</b>	
Asphalt Shingles, Metal Roof Panels, Photovoltaic Shingles	ASTM D226 Type II ASTM D4869 Type III or IV ASTM D6757	Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 4 inches (51 mm); 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 (305 mm) o.c., and one row at the end and side laps fastened 6 inches (152 mm) o.c.
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	<p>Apply in accordance with Section R905.1.1.1, Item 3 <del>4 or Section R905.1.1.3, Item 3 as applicable to the type of roof covering.</del></p> <p>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, <math>V_{ult}</math>, 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. 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. Cap nail shank shall have a length sufficient to penetrate through</p>

			the roof sheathing or not less than $\frac{3}{4}$ inch into the roof sheathing.
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#### R905.1.1.2 Underlayment for concrete and clay tile.

Underlayment for concrete and clay tile shall comply with Section 905.3.3.

#### R905.1.1.3 Underlayment for wood shakes and shingles.

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

-

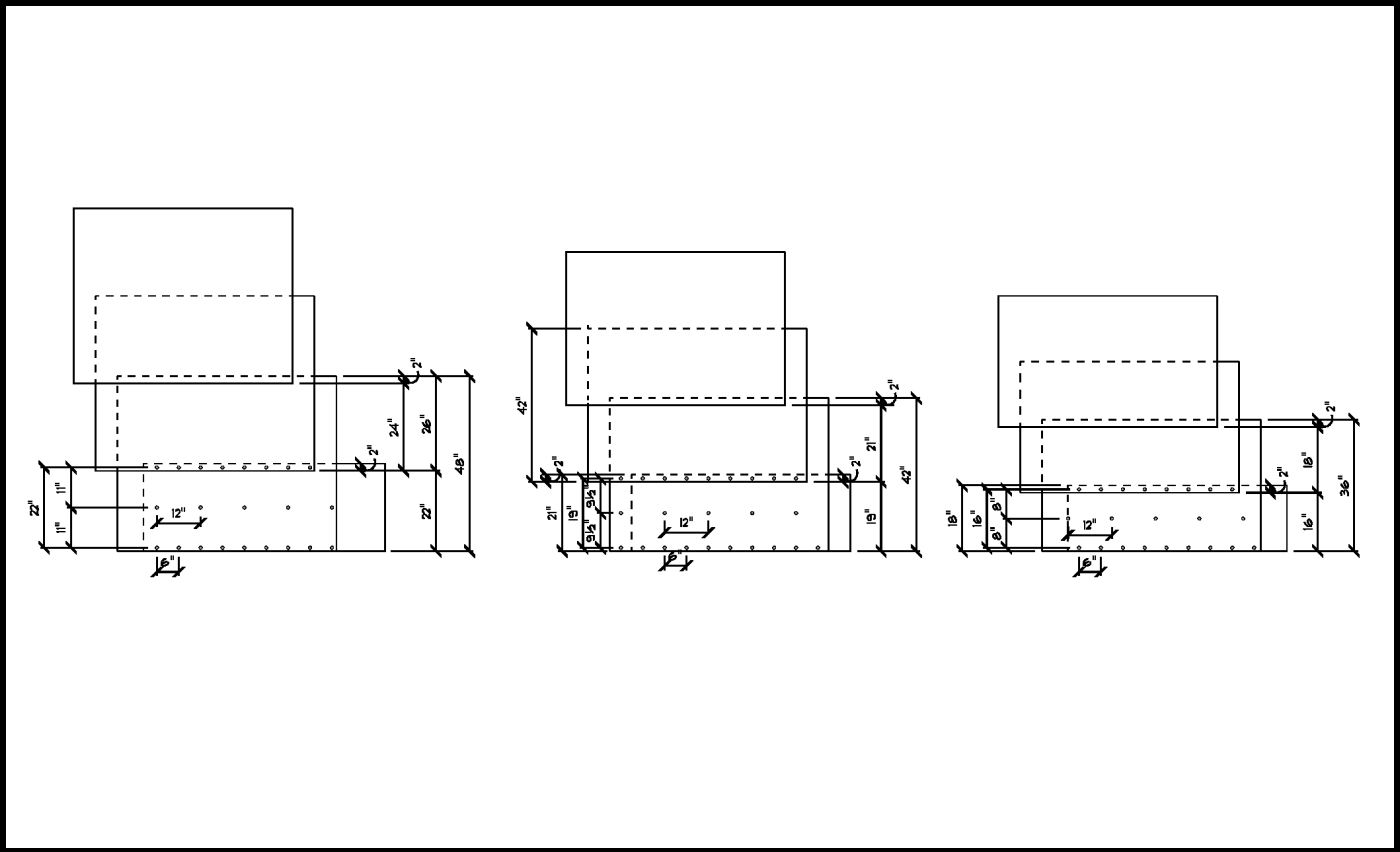
1. A minimum 4-inch-wide (102 mm) strip of self-adhering polymer-modified bitumen membrane complying with ASTM D1970, installed in accordance with the manufacturer's instructions for the deck material, shall be applied over all joints in the roof decking. An approved underlayment in accordance with Table R905.1.1.1 for the applicable roof covering shall be applied over the entire roof over the 4-inch-wide (102 mm) membrane strips.

-

2. A minimum  $3\frac{3}{4}$ -inch-wide (96 mm) strip of 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 underlayment complying with Table R905.1.1.1 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 and shall be offset by 6 feet. 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. 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. Power-driven metal caps shall have a minimum thickness of 0.010 inch. 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. 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.



**2023 FBC Modification FRSA #20 Underlayment Sealed Deck Rework (Residential) Attachment****SECTION R905** (After changes included in this modification)**REQUIREMENTS FOR ROOF COVERINGS****R905.1 Roof covering application.**

Roof coverings shall be applied in accordance with the applicable provisions of this section and the manufacturer's installation instructions. Unless otherwise specified in this section, roof coverings shall be installed to resist the component and cladding loads specified in Table R301.2 (2), adjusted for height and exposure in accordance with Table R301.3(3).

**905.1.1 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 ASTM 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 R905.1.1.1, R905.1.1.2 or R905.1.1.3 as applicable.

**Exception:** Compliance with Section R905.1.1.1 is not required for structural metal panels that do not require a substrate or underlayment.

**Table R905.1.1(1)****Underlayment Types.**

Reserved.

**Table R905.1.1(2)****Underlayment Application.**

Reserved.

**Table R905.1.1(3)****Underlayment Attachment.**

Reserved.

**R905.1.1.1 Underlayment for asphalt shingles, metal roof panels or shingles, mineral surfaced roll roofing, slate and slate-type shingles, wood shakes, wood shingles**

Underlayment for asphalt shingles, metal roof panels or shingles, mineral surfaced roll roofing, slate and slate-type shingles, wood shakes, 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, reroiling 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 3-3/4\_-inch-wide (102 96 mm) strip of selfadhering polymer-modified bitumen membrane complying with ASTM D1970 or 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 R905.1.1.1 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 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 underlayment, overlapping successive sheets half the width of a full sheet plus 2 inches. 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 3/4 inch (19.05 mm) into the roof sheathing.

**TABLE R905.1.1.1 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		Underlayment shall be applied shingle fashion, parallel to and starting from the eave and lapped 4 inches (51 mm); 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 (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. 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. 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. 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, Wood Shingles, Wood Shakes	ASTM D226 Type II ASTM D4869 Type III or IV	Apply in accordance with Section R905.1.1.1, Item 3 <del>4 or Section R905.1.1.3, Item 3 as applicable to the type of roof covering.</del>	

R905.1.1.2 Underlayment for concrete and clay tile.

Underlayment for concrete and clay tile shall comply with Section 905.3.3

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

**R10475**

60

Date Submitted	02/15/2022	Section	906.2	Proponent	Greg Keeler
Chapter	9	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

1508.2

### Summary of Modification

Adds ASTM C1902 to Table 906.2 "Material Standards for Roof Insulation".

### Rationale

Today, the scope of ASTM C552, "Standard Specification for Cellular Glass Thermal Insulation", encompasses applications where the cellular glass is intended to be used on surfaces that operate between -450 F and 800 F. While useful in industrial and pipe applications, this temperature range is much broader than needed for typical building material applications and limits the flexibility in the manufacturing operation to modify the formulation or process to tailor the properties to the needs of the building materials market. Therefore, the new material specification of ASTM C1902, "Standard Specification for Cellular Glass Insulation Used in Building and Roof Applications", is being proposed that is better aligned to service the building materials market. This specification would be differentiated from the existing ASTM C552 specification in the following ways: 1. Narrow the scope of the service temperature range to that of typical building applications a. From the industrial temperature of -450 F to 800 F to the building temperature range of -50 F to 200 F 2. Remove properties that are not pertinent to the building materials market a. Hot-surface performance warpage – This test refers primarily to high-temperature insulations that are applicable to hot-side temperatures as high as 800°F to determine material warpage or cracking and is not relevant to buildings. b. Stress corrosion – This test is for insulation in contact with austenitic stainless-steel piping to assess corrosion of a stressed component and is not relevant to buildings. 3. Add properties that are pertinent to the building materials market a. Dimensional stability – This is a measurement of a material's change in dimensions in response to various environmental exposure conditions, which can be important to building systems.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None

**Impact to building and property owners relative to cost of compliance with code**

None

**Impact to industry relative to the cost of compliance with code**



None

**Impact to small business relative to the cost of compliance with code**

## Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate

**Does not degrade the effectiveness of the code**

Does not degrade

**906.2 Material standards.**

Above-deck thermal insulation board shall comply with the standards in Table 906.2/

**TABLE 906.2****MATERIAL STANDARDS FOR ROOF INSULATION**

Cellular glass board	ASTM C552 or ASTM C1902
Composite boards	ASTM C1289, Type III, IV, V or VII
Expanded polystyrene	ASTM C578
Extruded polystyrene	ASTM C578
Fiber-reinforced gypsum board	ASTM C1278
Glass-faced gypsum board	ASTM C1177
High-density polyisocyanurate board	ASTM C1289, Type II, Class 4
Mineral fiber insulation board	ASTM C726
Perlite board	ASTM C728
Polyisocyanurate board	ASTM C1289, Type I or II
Wood fiberboard	ASTM C208, Type II

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

**R9951**

61

Date Submitted	01/24/2022	Section	46	Proponent	Michael Silvers (FRSA)
Chapter	2712	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

Residential Section 905.3 Building Section 1507.3 Chapter 35

### Summary of Modification

This modification updates Referenced Standard FRSA/TRI High Wind Concrete and Clay Roof Tile Manual from the Sixth to the Seventh Edition.

### Rationale

This modification updates Referenced Standard FRSA/TRI High Wind Concrete and Clay Roof Tile Manual from the Sixth to the Seventh Edition. The manual is being updated to comply with ASCE 7-22

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

FRSA

Florida Roofing and Sheet Metal ~~and Air Conditioning~~ Contractors Association.

P.O. Box 4850

Winter Park, FL 32793

FRSA/TRI Alliance

Florida High Wind Concrete and Clay Roof Tile Installation Manual, ~~Sixth~~ Seventh Edition ~~Revised~~

~~September~~ December 2018 23 (09 12—18 22)

R905.3, R905.3.2, R905.3.3, R905.3.3.1, R905.3.6, R905.3.7, R905.3.7.1, R905.3.8

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Residential

**R10477**

62

Date Submitted	02/15/2022	Section	46	Proponent	Greg Keeler
Chapter	2712	Affects HVHZ	No	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

10475

### Summary of Modification

Adds ASTM C1902 to Chapter 46 to correlate with Mod 10475 to add same to Table R906.2

### Rationale

This proposal correlates with Mod 10475 which adds ASTM C1902 to Table R906.2

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None

**Impact to building and property owners relative to cost of compliance with code**

None

**Impact to industry relative to the cost of compliance with code**

None

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Yes

**Does not degrade the effectiveness of the code**

Does not degrade

# ASTM

ASTMInternational  
100BarrHarborDrive,P.O. BoxC700  
WestConshohocken,PA 19428-2959

Standard reference number	Title
-	
C1902	Standard Specification for Cellular Glass Insulation Used in Building and Roof Applications

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R10068**

63

Date Submitted	02/02/2022	Section	5.2.1	Proponent	Michael Silvers (FRSA)
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Adds a minimum distance of 2" that the horizontal flange shall extend back on the roof. The existing requirement for a 2" horizontal flange leaves less than 1-1/2" on the roof when using a very common "T" drip.

### Rationale

Adding a minimum distance of 2" in which the horizontal flange shall extend back on the roof improves on the existing language. The existing requirement for a 2" horizontal flange leaves less than 1-1/2" on to the roof when using a very common "T" drip. Requiring a minimum of 2" back on to the roof increases the resistance to rotational forces exerted on the roof in high wind events. It allows for proper staggering of nails to further resist these forces. It also will help minimize driving nails between the fascia and sheathing or too close to the edge of the sheathing. This requirement currently exist in standard (non HVHZ) portions of this code.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**



Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

## 5.2 Installation requirements:

5.2.1 Vertical flange dimensions shall be not less than 1 1/2 in. and the horizontal dimension shall not be less than 2 in. wide and shall extend back on the roof a minimum of 2 inches (51mm). The vertical flange shall be of sufficient length to extend below the sheathing or other member immediately contiguous thereto by not less than 1/2 in. Table 2 herein lists maximum vertical flange dimensions for various drip edge/gravel stop materials.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

R9909

64

Date Submitted	01/18/2022	Section	3	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

9910

### Summary of Modification

Nail penetration and underlayment offset.

### Rationale

This modification makes two unrelated changes. First, it adjusts the fastener penetration requirement to make it consistent with guidance from ARMA and NRCA. Companion MOD 9910 makes the same change in Florida Building Code – Building, Section 1518.7.3.2. Second, this modification stipulates underlayment endlap offset per non-HVHZ requirements (see, for example, Florida Building Code – Building Table 1507.1.1.1), and ARMA and NRCA guidance.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement.

#### Impact to building and property owners relative to cost of compliance with code

Clarifications should not impact cost of compliance.

#### Impact to industry relative to the cost of compliance with code

Clarifications should not impact cost of compliance.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Creates consistency in underlayment offset between HVHZ and non-HVHZ. Adjusts nail penetration to industry standard to clarify requirements for installers.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Creates consistency in underlayment offset between HVHZ and non-HVHZ. Adjusts nail penetration to industry standard to clarify requirements for installers.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade code effectiveness.

**Revise RAS 115 as shown:**

- 3.3 Asphalt shingles shall be installed in compliance with the Product Approval installation specifications, but in no case with less than six approved roofing nails (12 ga. by 1¼ in. corrosion-resistant annular ring shank roofing nails) or approved fastening devices which penetrate through the sheathing or wood plank a minimum of ~~3/4~~ 1/8 in. or penetrate a 1 in. or greater thickness of lumber a minimum of 1 in. except where architectural appearance is to be preserved, in which case a minimum of ¾ in. nail may be used.
- 4.1 Minimum prescriptive underlayments shall be one of the following, unless otherwise specifically noted in roofing assembly Product Approval:
- A double layer of an ASTM D226, Type I, with a 19-inch headlap; or
  - A single layer of an ASTM D226, Type II with a 4-inch headlap; or
  - A single layer of an ASTM D2626 coated base sheet with a 4-inch headlap.
  - All endlaps shall be a minimum of 6 inches and shall be offset by a minimum of 6 feet from course-to-course.
  - All valleys shall be woven.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

R9911

65

Date Submitted	01/18/2022	Section	6	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

9912

### Summary of Modification

Installation of rake shingles.

### Rationale

This modification clarifies the intent to interlace roof cement between shingles along rakes to provide increased wind resistance. Inclusion of a new figure in RAS 115 provides additional clarity of this provision. Finally, it replaces references to “flashing cement” with “roof cement” to standardize the terminology within this section. According to TAS 110, asphalt roof cement is required to comply with ASTM D4586. Companion MOD 9912 addresses this issue in Florida Building Code – Building, Section 1518.7.3.3.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

This is intended as a clarification. Enforcement may be affected if this practice is not being performed.

#### Impact to building and property owners relative to cost of compliance with code

This is intended as a clarification. If this practice is not being performed, cost may be impacted.

#### Impact to industry relative to the cost of compliance with code

No impact expected to cost of compliance.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Clarifies requirement for asphalt shingle installation at rakes to support wind resistance.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Clarifies requirement for asphalt shingle installation at rakes to support wind resistance.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

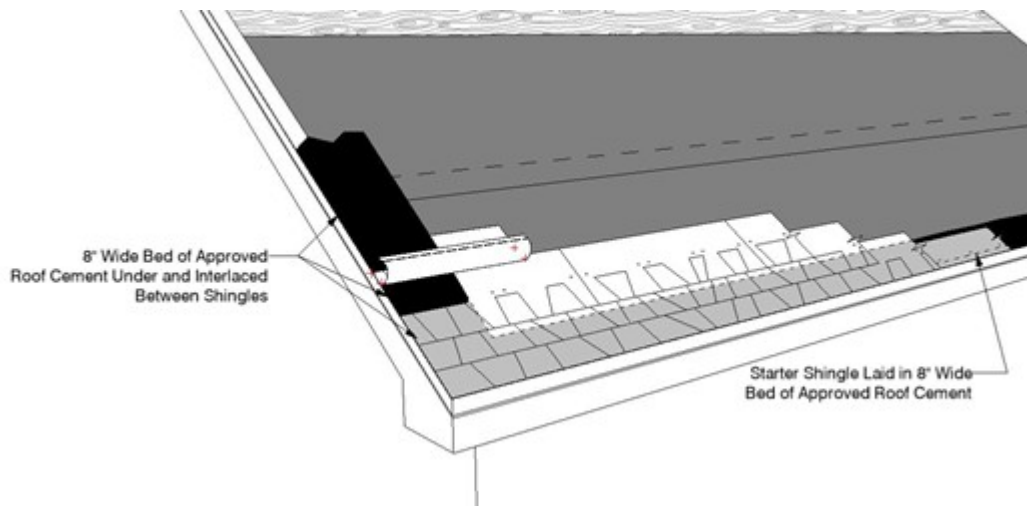
Does not degrade code effectiveness.

**Revise RAS 115 as shown:**

6.1 At all intersections, eaves, rakes, valleys and gable ends, the shingles and starter strips shall be set in a minimum 8-in. wide strip of approved ~~roof flashing~~ cement. Approved roof cement shall be interlaced between shingle courses along rakes, as shown in Figure 6.1. Maximum thickness of ~~roof flashing~~ cement shall be 1/8 in. as excessive use of the cement may cause blistering, or bleed through. Shingles shall not extend more than 1/4 in. beyond the eave and rake drip.

**Add New Figure 6.1:**

Figure 6.1





# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

R9913

66

Date Submitted	01/18/2022	Section	6	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Starter shingle requirements.

### Rationale

This series of modifications updates requirements for starter shingles: (1) Removes mineral-surfaced roll roofing as an option as it is not appropriate in that application; (2) Removes shingles without a self-sealing strip as they are not appropriate for this application, nor are they used; (3) Removes roll roofing as an option for starter shingles as it is not appropriate in that application; (4) Removes redundant language about cutout alignment from 6.4, which is addressed in 6.3; (5) Adds new language to clarify that starter shingle sealant strip is to be properly oriented downslope along the eave edge.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

Removal of options may affect local entity enforcement if those options are practiced in the jurisdiction.

#### Impact to building and property owners relative to cost of compliance with code

Impact on cost of compliance is expected to be minimal because options removed are not typically used.

#### Impact to industry relative to the cost of compliance with code

No cost of compliance impact is expected.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This is an update that removes starter options that are not as effective for wind resistance and not typically used.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This update removes starter options that are not as effective and not typically used.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate. Removes options that are not typically used.

**Does not degrade the effectiveness of the code**

Does not degrade effectiveness of the code.

**Revise RAS 115 as shown:**

- 6.2 Starter strip shall be a row of either self-sealing non-laminated shingles or approved starter shingles. The starter strip may be either a row of nonlaminated shingles trimmed to the shingle manufacturer's recommendations or a strip of mineral surfaced roll roofing not less than 7 in. wide.
- 6.3 If self-sealing non-laminated shingles are used for the starter strip, remove the tab portion of each shingle and position the remaining strip along the eaves, with Install such that the factory-applied adhesive is face up and closest to along the eaves edge. Trim material from the end of the first shingle in the starter strip according to manufacturer's specifications to ensure that the cutouts of the first course of shingles are not placed over the starter strip joints. Fasten starter strips parallel to the eaves along a line above the eave line according to manufacturer's installation instructions~~specifications~~. Position fasteners to insure they will not be exposed under the cutouts in the first course.
- 6.4 For shingles without a self-sealing strip the tabs shall be removed and approved flashing cement shall be applied in spots approximately the size of a quarter at the corner of each tab of the first course. Starter shingles shall be nailed along a line not greater than 4 in. above the eave line nailing not greater than 6 in. o.c. ~~Ensure that the cutouts of the first course are not placed over the starter strip joints.~~
- 6.5 If roll roofing is used for the starter strip, nail along a line not greater than 4 inches above the eave line nailing not greater than 12 inches o.c. Approved flashing cement shall be applied as noted above for nonsealing shingle starter. If more than one piece of roll roofing must be used, the end joint shall be butted. ~~Starter joints shall be staggered with succeeding shingle joints, and the number of starter joints shall be kept to a minimum.~~

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

R9914

67

Date Submitted	01/18/2022	Section	5	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Membrane over valley and wall flashing.

### Rationale

This modification removes the requirement to cover penetrations in valley metal flange and metal step flashing at wall abutments with both flashing cement and membrane. Covering with a membrane is not done in practice. Also, an inadvertent apostrophe is removed in the first sentence of Section 5.4.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact expected to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

No cost impact is expected.

#### Impact to industry relative to the cost of compliance with code

No cost impact is expected.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Removes a requirement that is not necessary or practiced to reduce potential confusion in interpretation of code provisions.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Removes a requirement that is not necessary or practiced to reduce potential confusion in interpretation of code provisions.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade the effectiveness of the code.

**Revise RAS 115 as shown:**

- 5.4 Valley metal shall be a minimum 16 in. wide rolled or preformed material of thickness<sup>2</sup> in compliance with Section 1517.6 of the Florida Building Code, Building. Valley metal shall be set over the underlayment, or over an optional 18 in. sweat sheet. Fasten valley metal with minimum 12 gage by 1 1/4 in. annular ring shank roofing nails of similar materials 12 in. o.c. 1 in. in from each exterior edge, except where architectural appearance is to be preserved, in which case a min 3/4 in. nail may be used. The entire edge of the flange shall be sealed, covering all nail penetrations with flashing cement ~~and membrane~~. All horizontal laps shall be a minimum of 6 in. and shall be fully embedded with approved flashing cement. No nails shall be permitted in the center of the valley.
- 9.2 Option A: All wall abutments shall be flashed with a minimum of 4 in. by 5 in. "L" metal flashings of materials and thickness in accordance with Section 1517.6 of the Florida Building Code, Building. The metal "L" flashing shall be set in approved flashing cement and set flush to base of wall and over underlayment (see Detail B). Both horizontal and vertical metal flanges shall be fastened 6 inches o.c. with approved fasteners. Fastening shall be in accordance with RAS 111. All laps shall be a minimum of 4 inches fully sealed in approved flashing cement. Flashing shall start at the lower portion of the roof to ensure water-shedding capabilities of all metal laps. The entire edge of the metal flashing shall be sealed covering all nail penetrations with approved flashing cement ~~and membrane~~. The metal "L" flashing shall be counter flashed. All metal counter flashing shall be installed in accordance with RAS 111.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R10180**

68

Date Submitted	02/14/2022	Section	115	Proponent	Michael Silvers (FRSA)
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

10175, 10176, 10179 and 10238

### Summary of Modification

Eliminates the prescriptive language in this volume and section and instead directs the user to the proper underlayment sections of the code where additional options are available. This section will then indicate when a secondary water barrier is required. Uses same approach as in RAS 133.

### Rationale

This modification will align HVHZ roof underlayment requirements with the more stringent secondary water barrier requirements used in the rest of Florida and will also allow the use of self-adhering membrane applied direct to deck in the HVHZ. Self-adhering underlayments have been accepted outside the HVHZ for well over a decade. They have proven to be the most effective secondary water barrier (SWB) capable of helping building owners and occupants to utilize their structures after hurricanes. Their proven resistance to wind uplift and wind driven rain makes them an excellent SWB. This is an important consideration with the higher design wind speeds in the HVHZ. Language was previously added to the code that describes how future roof systems can be installed when a self-adhering underlayment has been previously installed as part of a roof system. Their use has been widely accepted and eventually embraced by Florida's roofing industry for good reason. The building owners and citizens residing in the HVHZ deserve this option.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

## Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.



#### 4. Underlayment

4.1 Underlayment shall be in accordance with Chapter 15 (High-Velocity Hurricane Zones) of the *Florida Building Code, Building*.

4.1 Minimum prescriptive underlayments shall be one of the following, unless otherwise specifically noted in roofing assembly Product Approval:

- •A double layer of an ASTM D226, Type I, with a 19-inch headlap; or
- •A single layer of an ASTM D226, Type II with a 4-inch headlap; or
- •A single layer of an ASTM D2626 coated base sheet with a 4-inch headlap.
- •All endlaps shall be a minimum of 6 inches.
- •All valleys shall be woven.

4.2 All ~~u~~ Underlayments shall be fastened with approved minimum 12 gage by 1<sup>1</sup>/<sub>4</sub> in. corrosion-resistant annular ring shank roofing nails fastened through minimum 32 gage by 1<sup>5</sup>/<sub>8</sub> in. diameter approved diameter tin caps. Underlayment shall be attached to a nailable deck in a grid pattern of 12 inches (305mm) between overlaps, with 6-inch (152 mm) spacing at overlaps at the overlaps. Nails shall be of sufficient length to penetrate through the sheathing or wood plank a minimum of <sup>3</sup>/<sub>16</sub> in. or penetrate 1 inch (25 mm) or greater thickness of lumber a minimum of 1 in., except where architectural appearance is to be preserved, in which case a minimum of <sup>3</sup>/<sub>4</sub> in. nail may be used.

4.3 If the underlayment is a self-adhering membrane, the membrane shall be applied over a mechanically attached anchor/base sheet attached in compliance with this section above.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R9915**

69

Date Submitted	01/18/2022	Section	2	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments** No

**Alternate Language** No

### Related Modifications

9916, 9917

### Summary of Modification

Add table title.

### Rationale

This modification to RAS 118 provides consistency with other areas of the code wherein all tables have a title. The reference in the associated Note is updated to point to the table title. The same change is proposed in RAS 119 (MOD 9916) and RAS 120 (MOD 9917).

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

No impact to cost of compliance.

#### Impact to industry relative to the cost of compliance with code

No impact to cost of compliance.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This clarification eliminates potential confusion by providing a title for the table and referring to the table by the new title.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This clarification eliminates potential confusion by providing a title for the table and referring to the table by the new title.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Improves clarity of the code.

**Revise RAS 118 as shown:**

NOTE #1: The following Table 1 provides the contractor with the choices available for underlayment systems. These systems can only be used on pitches designated in the table below.

**TABLE 1**

Roof Pitch	Counter Battens or Direct Deck	Choice of Underlayment	Plastic or Compatible Roof Cement at Nails Penetrating Underlayment	Reference
4:12 or Greater	Either	1. ASTM D226 Type II (#30) or ASTM D2626 (#43) organic base sheet nailed to deck, min. (#90) ASTM D6380, Class M or WS, Type II organic cap sheet set in Type IV hot asphalt.	Required	3.01A
	Either	2. Any Product Approval Approved underlayment system with a mechanically fastened base sheet, and cap sheet set in hot, cold, or self-adhered	Per Product Approval	3.01B, C, or D
	Either	3. Product Approval Listed Approved nail-on single-ply underlayment	Per Product Approval	3.01E

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R10095**

70

Date Submitted	02/05/2022	Section	3	Proponent	Gaspar Rodriguez
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

10093

### Summary of Modification

Correlates this Roofing Application Standard with Proposed Mod 10093 for underlayment. Also clarifies Section E single-ply requirements.

### Rationale

This mod correlates the new testing requirements proposed in Mod#10093 with the Roofing Application Standard referenced in this Mod.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None.

**Impact to building and property owners relative to cost of compliance with code**

None.

**Impact to industry relative to the cost of compliance with code**

None.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes, it indicates the new requirements for TAS 103 Underlayment used during Tile Roof Installation.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes, it indicates the new requirements for TAS 103 Underlayment used during Tile Roof Installation.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate, it indicates the new requirements for TAS 103 Underlayment used during Tile Roof Installation.

**Does not degrade the effectiveness of the code**

Does not degrade, it indicates the new requirements for TAS 103 Underlayment used during Tile Roof Installation.

**Code Mod for RAS 118 (PART III Execution) Section 3 Options D and E**

D. Product Approved Anchor/Base Sheet/Self-Adhered Underlayment System. The roof cover is terminated at approved metal flashings. Any approved anchor/base sheet as listed in the Product Approval shall be mechanically attached to the wood deck in a manner that achieves equal or greater uplift resistance than the components and fastening specified in Option A. The mechanical attachment shall be with approved fasteners with spacing as specified in the TAS 103 underlayment Product Approval. ~~spaced in a 12 in. grid staggered in two rows in the field and 6 in. on center at the laps or as specified in the underlayment manufacturer's Product Approval.~~ Anchor/base sheet end laps shall be a minimum of 6 in. and head laps shall be a minimum of 4 in. Over anchor/base sheet, apply one layer of any Product Approved, TAS 103 self-adhered underlayment in compliance with the self-adhered underlayment ~~manufacturers' Product Approval~~ approval/requirements.

E. Mechanically attached Self-Adhered Underlayment (single ply). A single-ply underlayment system utilizing any Product Approved, TAS 104 mechanically attached ~~self-adhered~~ underlayment. The roof cover is terminated at approved metal flashings. Apply one layer of any mechanically attached self-adhered underlayment in compliance with the TAS 104 underlayment ~~manufacturer's Product Approval~~ approved/requirements.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R9916**

71

Date Submitted	01/18/2022	Section	2	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments** No

**Alternate Language** No

### Related Modifications

9915, 9917

### Summary of Modification

Add table title.

### Rationale

This modification to RAS 119 provides consistency with other areas of the code wherein all tables have a title. The reference in the associated Note is updated to point to the table title. The same change is proposed in RAS 118 (MOD 9915) and RAS 120 (MOD 9917).

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

No impact to cost of compliance.

#### Impact to industry relative to the cost of compliance with code

No impact to cost of compliance.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This clarification eliminates potential confusion by providing a title for the table and referring to the table by the new title.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This clarification eliminates potential confusion by providing a title for the table and referring to the table by the new title.



**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Improves clarity of the code.

**Revise RAS 119 as shown:**

NOTE #1: The following Table 1 provides the contractor with the choices available for underlayment systems. These systems can only be used on pitches designated in the table below.

**TABLE 1**

Roof Pitch	Counter Battens or Direct Deck	Choice of Underlayment	Plastic or Compatible Roof Cement at Nails Penetrating Underlayment	Reference
4:12 or Greater	Either	ASTM D226 Type II (#30) or ASTM D2626 (#43) organic base sheet nailed to deck, min. (#90) ASTM D6380, Class M or WS, Type II organic cap sheet set in Type IV hot asphalt.	Required	3.01A
	Either	2. Any Product Approval Approved underlayment system with a mechanically fastened base sheet, and cap sheet set in hot, cold, or self-adhered	Per Product Approval	3.01B, C, or D
	Either	3. Product Approval Listed Approved nail-on single-ply underlayment	Per Product Approval	3.01E

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R10094**

72

Date Submitted	02/05/2022	Section	3	Proponent	Gaspar Rodriguez
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

10093

### Summary of Modification

Correlates proposed code mod 10093 with related Roofing Application Standard. Also clarifies Section E single-ply application.

### Rationale

This modification correlates this Roofing Application Standard with Proposed Mod 10093 new Testing Standard. Also clarifies Section E single-ply requirements

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None.

**Impact to building and property owners relative to cost of compliance with code**

None.

**Impact to industry relative to the cost of compliance with code**

None.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Correlates improved performance requirements from Proposed Mod 10093.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Correlates improved performance requirements from Proposed Mod 10093.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade code, correlates improved performance requirements from Proposed Mod 10093.

**Code Mod for RAS 119 (PART III Execution) Section 3 Options D and E**

- D. Product Approved Anchor/Base Sheet/Self-Adhered Underlayment System.  
The roof cover is terminated at approved metal flashings. Any approved anchor/base sheet as listed in the Product Approval shall be mechanically attached to the wood deck in a manner that achieves equal or greater uplift resistance than the components and fastening specified in option A. The mechanical attachment shall be with approved fasteners with spacing as specified in the TAS 103 underlayment Product Approval. ~~space~~ in a 12 in. grid staggered in two rows in the field and 6 in. on center at the laps or as specified in the underlayment manufacturer's Product Approval. ~~Anchor/base sheet end laps shall be a minimum of 6 in. and head laps shall be a minimum of 4 in.~~ Over anchor/base sheet, apply one layer of any Product Approved, TAS 103 self-adhered underlayment in compliance with the self-adhered underlayment ~~manufacturers'~~ Product Approval ~~approval/~~ requirements.
- E. Mechanically attached Self-Adhered Underlayment (single ply). A single-ply underlayment system utilizing any Product Approved, TAS 104 mechanically attached self-adhered underlayment. The roof cover is terminated at approved metal flashings. Apply one layer of any mechanically attached self-adhered underlayment in compliance with the TAS 104 underlayment ~~manufacturer's~~ Product Approval ~~approval/~~ requirements.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

R9917

73

Date Submitted	01/18/2022	Section	2	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

9915, 9916

### Summary of Modification

Add table title.

### Rationale

This modification to RAS 120 provides consistency with other areas of the code wherein all tables have a title. The reference in the associated Note is updated to point to the table title. The same change is proposed in RAS 118 (MOD 9915) and RAS 119 (MOD 9916). Also, a correction is provided to option 1 in the table to clarify that D2626 is an “organic” base rather than an “inorganic” base, as currently stated.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

No impact to cost of compliance.

#### Impact to industry relative to the cost of compliance with code

No impact to cost of compliance.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This clarification eliminates potential confusion by providing a title for the table and referring to the table by the new title. It also corrects an error.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This clarification eliminates potential confusion by providing a title for the table and referring to the table by the new title. It also corrects an error.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Improves clarify of the code and corrects an error.

**Revise RAS 120 as shown:**

NOTE #1: ~~The following~~ Table 1 provides the contractor with the choices available for underlayment systems. These systems can only be used on pitches designated in the table below.

**TABLE 1**

Roof Pitch	Choice of Underlayment	Plastic or Compatible Roof Cement at Nails Penetrating Underlayment	Reference
2:12 or Greater	ASTM D226 Type II (#30) or ASTM D2626 (#43) inorganic base nailed to deck, min ASTM D6380, Class M or WS, Type II (#90) organic cap sheet set in Type IV hot asphalt.	Required	3.01 A
	2. Any product approved underlayment system with a mechanically fastened base sheet, and cap sheet set hot, cold, or self-adhered.	per Product Approval	3.01 B, C, D or E



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R10096**

74

Date Submitted	02/05/2022	Section	3	Proponent	Gaspar Rodriguez
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

10093

### Summary of Modification

Correlates this Roofing Application Standard with proposed Mod #10093 new testing requirements for self-adhered underlayment.

### Rationale

This modification correlates the use of self-adhered underlayment that are in compliance with the new requirements proposed in MOD #10093.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None.

**Impact to building and property owners relative to cost of compliance with code**

None.

**Impact to industry relative to the cost of compliance with code**

None.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes it correlates the new requirements for underlayment used in Tile Roof Installation with the Roofing Application Standard.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes it correlates the new requirements for underlayment used in Tile Roof Installation with the Roofing Application Standard.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate, it correlates the new requirements for underlayment used in Tile Roof Installation with the Roofing Application Standard.

**Does not degrade the effectiveness of the code**

Does not degrade, it correlates the new requirements for underlayment used in Tile Roof Installation with the Roofing Application Standard.

**Code Mod for RAS 120 (PART III Execution) Section 3 Options D and E**

D. Product Approved Anchor/Base Sheet/Self-Adhered Underlayment System. The roof cover is terminated at approved metal flashings. Any approved anchor/base sheet as listed in the Product Approval shall be mechanically attached to the wood deck in a manner that achieves equal or greater uplift resistance than the components and fastening specified in Option A. ~~the mechanical attachment shall be with approved fasteners with spacing as specified in the TAS 103 underlayment Product Approval, spaced in a 12 in. grid staggered in two rows in the field and 6 in. on center at the laps or as specified in the underlayment manufacturer's Product Approval.~~ Anchor/base sheet end laps shall be a minimum of 6 in. and head laps shall be a minimum of 4 in. Over anchor/base sheet, apply one layer of any Product Approved, TAS 103 self-adhered underlayment in compliance with the self-adhered underlayment ~~manufacturers' Product Approval~~ approval/requirements. Head laps shall be back nailed 12 inch on center with approved nails through tin caps or by prefabricated fasteners in accordance with Sections 1517.5.1 and 1517.5.2 *Florida Building Code, Building*.

E. Mechanically attached Self-Adhered Underlayment (single ply). A single-ply underlayment system utilizing any Product Approved, TAS 104 ~~mechanically attached self-adhered~~ underlayment. The roof cover is terminated at approved metal flashings. Apply one layer of any mechanically attached self-adhered underlayment in compliance with the TAS 104 underlayment ~~manufacturer's Product Approval~~ approved/requirements.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

R10101

75

Date Submitted	02/06/2022	Section	3.07	Proponent	Gaspar Rodriguez
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

The images for Drawing 10 and Drawing 12 need to be swapped. Drawing 10 detail shows anti-ponding metal instead of EPDM Eave Closure. Drawing 12 shows EPDM metal instead of Anti-Ponding Metal.

### Rationale

The images for the two drawings are swapped and need to be exchanged. The images should be switched, the drawing numbers correlate correctly with the section text.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

None, just correcting a typo.

#### Impact to building and property owners relative to cost of compliance with code

None, just correcting a typo.

#### Impact to industry relative to the cost of compliance with code

None, just correcting a typo.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Just correcting a typo error.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Just correcting a typo error.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

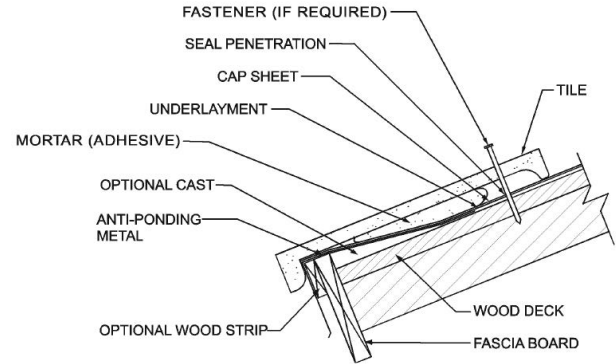
Just correcting a typo error.

#### Does not degrade the effectiveness of the code

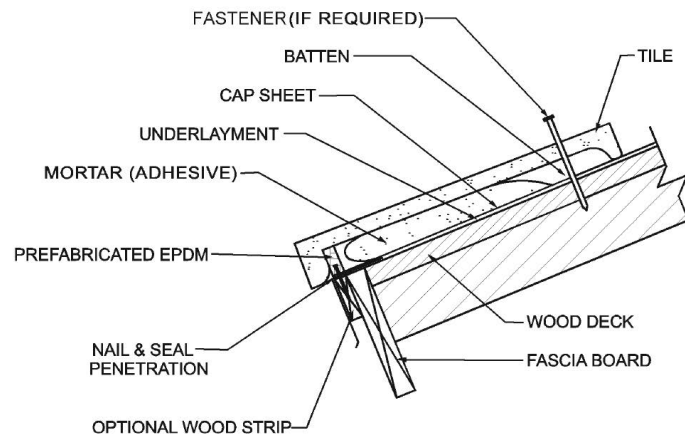
Just correcting a typo error.



**DRAWING 10**  
**EAVE TILE DETAIL**  
**EPDM EAVE CLOSURE**



**DRAWING 12**  
**EAVE TILE DETAIL**  
**ANTIPONDING METAL**



# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R10178**

76

Date Submitted	02/11/2022	Section	1	Proponent	Greg Keeler
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

1518.2, 1518.4, TAS 110, RAS 115, Chapter 35

### Summary of Modification

Insert requirement for ASTM D8257 related to synthetic underlayment and clarify fastening requirements.

### Rationale

This proposal adds ASTM D8257, the first consensus Standard that applies exclusively to synthetic underlayment. It also revises the lapping and fastening requirements to cover underlayments of varying widths.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No

**Impact to building and property owners relative to cost of compliance with code**

No

**Impact to industry relative to the cost of compliance with code**

No

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Yes

**Does not degrade the effectiveness of the code**

Yes



ROOFING APPLICATION STANDARD (RAS) No. 130-20  
INSTALLATION CRITERIA FOR WOOD ROOF SHINGLES AND SHAKES APPLICATION

**1. Scope**

1.1 This application standard provides the minimum installation criteria for wood shingles and shakes application.

**2. Definitions**

2.1 For definitions of terms used in this application standard, refer to ASTM D1079 and the *Florida Building Code, Building*.

**3. General**

3.1 Maximum exposure for wood shingles and shakes shall comply with Table 1 herein, unless specifically specified in the roof assemblies Product Approval.

3.2 Wood shingles and shakes may be applied over solid or spaced sheathing. In spaced sheathing applications, the first 36 in. above the eave line shall be solidly sheathed. All wood decks shall comply with the provisions set forth in Chapters 15 and 23 (High-Velocity Hurricane Zones) of the Florida Building Code, Building.

3.3 Wood shingles and shakes shall not be installed on roof mean heights greater than 33 feet, unless specifically specified in the roof assemblies Product Approval.

**4. Wood Shingles**

**4.1 Underlayment**

**Solid Sheathing:** Two plies of ASTM D226, Type I felt or an Approved ASTM D8257 synthetic underlayment overlapped half the width of a full sheet plus 2 in. 49 in., or a single layer of ASTM D226 Type II felt or an Approved ASTM D8257 synthetic underlayment overlapped a minimum of 4 in. on side laps, and 6 in. on the end laps. Fastened with corrosion resistant 12 ga. roofing nails through tin caps. Fasten with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c., and one row at the laps fastened 6 in. o.c.

**Spaced Sheathing:** Underlayment shall be installed at a minimum of 36 in. wide course of underlayment shall be installed at the eave line. Underlayment shall be Fastened with corrosion resistant 12 ga. roofing nails through tin caps. Fasten with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c. horizontally and vertically.

Roofing nails shall be of sufficient length to penetrate through the plywood panel or wood plank decking not less than 3/16 in., or to penetrate into a 1 in., or greater, thickness of lumber not less than 1 in.

4.2 Edge metal shall comply with Section 1517.6 of the Florida Building Code, Building, and RAS 111.

4.3 Valleys may be installed open or closed. A 36 in. wide sheet of minimum ASTM D226 Type II organic felt or an Approved ASTM D1970 self-adhering polymer-modified underlayment shall be installed centered in the valley, ASTM D226 Type II felt or Approved ASTM D8257 synthetic underlayment shall be fastened 6 in. o.c. through tin-caps at each edge of the sheet. Minimum end laps shall be 12 in. and fully adhered with approved flashing cement.

4.4 Valley metals shall comply with the Section 1517.6 of the Florida Building Code, Building. Valley metal shall be preformed with side returns and a minimum 1 in. high center water diverter. Valley metal shall have a minimum formed width of 20 in. Valley metal shall be fastened with minimum 2 in. wide metal clips spaced 12 in. o.c. Metal

clips shall be fabricated of similar metal and fastened with minimum two approved 1 1/4 in. annular ring shank roofing nails at every clip (see Detail A).

4.5 Metal laps shall be a minimum of 12 in., and shall be sealed with approved flashing cement. For open valley installations, the wood shingles are to be cut to form a straight edge. The open area of the valley shall be no less than 4 in. and no more than 8 in. wide. For closed valley installations, the wood shingles are to be miter cut along the center water diverter. Wood shingle fasteners shall be kept back at least 8 in. from the valley centerline. Wider wood shingles and the positioning of the fasteners higher at the valley may be required.

4.6 The maximum exposure to the weather for wood shingle applications shall comply with Table 1 herein.

4.7 Reserved.

4.8 The beginning or starter course of wood shingles at the eave line shall be doubled as a minimum. The wood shingles shall be project a minimum 3/4 in. to a maximum of 2 in. beyond the drip edge at both eaves and rakes. Spacing between shingles (joints or key ways) shall be a minimum of 1/4 in. and a maximum of 3/8 in. Shingles shall be positioned so that they cover the joints in the preceding course and adjacent courses shall be offset a minimum of 1 1/2 in. In any three courses (adjacent), no two joints should be directly aligned (see Detail B).

4.9 Each shingle shall be fastened with a minimum of two (2) 5d hot-dipped, galvanized box nails. Fastened 3/4 in. to 1 in. from the edge of the shingle, and 1/2 in. to 2 in. above the butt line of the next course. In all cases, fasteners shall be of sufficient length to penetrate through the plywood panel or wood plank decking not less than 3/16 in., or to penetrate into a 1 in., or greater, thickness of lumber not less than 1 in. Nails shall be driven straight and flush. Nails shall not be overdriven (see Detail C).

4.10 Hip and ridges may be installed from pre-manufactured units or field assembled units from manufacturer's shingles. The exposed juncture of the roof hip and ridge areas shall be covered with a minimum 6 in. wide strip of ASTM D226 Type II organic felt or Approved ASTM D8257 synthetic underlayment, prior to installing the hip and ridge units. No felt shall be left exposed. Lay alternate overlapping hip and ridge units, starting with a double starter course. The weather exposure of the hip and ridge units shall be the same exposure as the field shingles. Each side of the hip and ridge units shall be a minimum of 4 in. wide. Each hip and ridge unit shall be fastened to the roof with two fasteners of the same type as that used for the field shingles. Fasteners shall be of sufficient length to penetrate the plywood panel or wood plank decking not less than 3/16 in.; or to penetrate into a 1 in., or greater, thickness of lumber not less than 1 in. Nails shall be driven straight and flush. Nails shall not be overdriven (see Detail C).

4.11 Metal flashing materials shall comply with Section 1517.6 of the Florida Building Code, Building. Metal step flashing shall be used at all vertical side walls. The length of the step flashing units shall be 3 in. longer than the exposure of the shingles. The step-flashing unit shall be installed just up slope from the exposed area of the wood shingle, in such a manner as to be covered by the next wood shingle, while maintaining a minimum 3 in. headlap. Step flashing metal shall extend 5 in. up the vertical surface and 5 in. horizontally onto the wood shingle. Nail each step-flashing unit near the upper corner. Location of the shingle fasteners must be adjusted to insure that the step flashing is not penetrated. Vertical head walls shall be flashed with apron type metal flashing. Wood shingles shall be installed up to the vertical head wall and out over the top course of wood shingles a minimum of 5 in. Wall treatment or flashing or headwall flashing a minimum of 3 in. and shall terminate a minimum of 1 in. above the surface of the wood shingles. Metal counter flashing shall be installed in compliance with Roofing Application Standard RAS 111.

4.12 Roof penetration that protrude through a roof shall be flashed at all intersecting angles to prevent leakage. Flashing details shall be in compliance with manufacturer's recommendations, unless otherwise indicated in roof assembly's Product Approval.

## 5. Wood Shakes

## 5.1 Underlayments:

Solid Sheathing: ~~Underlayment shall be installed at a~~ minimum of 36 in. wide course of underlayment shall be installed at the eave line. Underlayment shall be ~~fastened~~ with corrosion resistant 12 ga. roofing nails through tin caps. Fasten with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c. horizontally and vertically.

Spaced Sheathing: ~~Underlayment shall be installed at a~~ minimum of 36 in. wide course of underlayment shall be installed at the eave line. Underlayment shall be ~~fastened~~ with corrosion resistant 12 ga. roofing nails through tin caps. Fasten with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c. horizontally and vertically.

Roofing nails shall be of sufficient length to penetrate through the plywood panel or wood plank decking not less than 3/16 in., or to penetrate into a 1 in., or greater, thickness of lumber not less than 1 in.

5.2 Interlayment shall be a minimum of ASTM D226 Type I felt or Approved ASTM D8257 synthetic underlayment with a minimum width of 18 in. and shall be applied between each succeeding course of shakes. Interlayment shall be fastened on the upper edge of the sheet. The bottom edge of the interlayment shall be positioned above the butt edge of each course of shakes, a distance equal to twice the weather exposure of the wood shakes. Extend interlayment up vertical surfaces a minimum of 4 in. No ~~felt underlayment~~ shall be exposed.

5.3 Edge metal shall comply with Section 1517.6 of the Florida Building Code, Building and RAS 111.

5.4 Valleys may be installed open or closed. A minimum 36 in. wide sheet of minimum ASTM D226 Type II ~~organic felt~~ or Approved ASTM D8257 synthetic underlayment shall be installed over the underlayment and centered in the valley, fastened 6 in. o.c. through tin-caps at each edge of the sheet. Minimum end laps shall be 12 in. and fully adhered with ~~a~~ Approved flashing roof cement.

5.5 Valley metals shall comply with the Section 1517.6 of the Florida Building Code, Building. Valley metal shall be preformed with side returns and a minimum 1 in. high center water diverter. Valley metal shall have a minimum formed width of 20 in. Valley metal shall be fastened with minimum 2 in. wide metal clips spaced 12 in. o.c. Metal clips shall be fabricated of similar metal and fastened with minimum two approved 1 1/4 in. annular ring shank roofing nails at every clip (see Detail A).

5.6 Metal laps shall be a minimum of 12 in., and shall be sealed with approved flashing cement. For open valley installations, the wood shakes are to be cut to form a straight edge. The open area of the valley shall be no less than 4 in. and no more than 8 in. wide. For closed valley installations, the wood shakes are to be miter cut along the center water diverter. Wood shake fasteners shall be kept back at least 8 in. from the valley centerline. Wider wood shakes and the positioning of the fasteners higher at the valley may be required.

5.7 The maximum exposure to the weather for wood shakes shall comply with Table 1 herein. An interlayment sheet shall be installed between each shake. The beginning or starter course of wood shakes at the eave line shall be doubled as a minimum. The wood shakes shall project a minimum 3/4 in. to a maximum 2 in. beyond the drip edge at both eaves and rakes.

5.8 Spacing between shakes (joints or key ways) shall be a minimum 3/8 in. and a maximum of 5/8 in. Shakes shall be positioned so that they cover the joints in the preceding course. Adjacent courses shall be offset a minimum of 1 1/2 in. In any three courses (adjacent), no two joints should be directly aligned (see Detail D).

5.9 Each shake shall be fastened with a minimum of two (2) 6d hot-dipped, galvanized box nails. Fastened 3/4 in. to 1 in. from the edge of the shake, and 1 1/2 in. to 2 in. above the butt line of the next course. In all cases, fasteners shall be of sufficient length to penetrate through the plywood panel or wood plank decking not less than

3/16 in., or to penetrate into a 1 in., or greater, thickness of lumber not less than 1 in. Nails shall be driven straight and flush. Nails shall not be overdriven (see Detail C).

5.10 Hip and ridges may be installed from pre-manufactured units or field assembled units from manufacturer's shakes. The exposed juncture of the roof hip and ridge areas shall be covered with a minimum 6 in. wide strip of ASTM D226 Type II ~~organic felt~~ or Approved ASTM D8257 synthetic underlayment, prior to installing the hip and ridge units. No felt shall be left exposed. Lay alternate overlapping hip and ridge units, starting with a double starter course. The weather exposure of the hip and ridge units shall be the same exposure as the field shingles. Each side of the hip and ridge units shall be a minimum of 4 in. wide. Each hip and ridge unit shall be fastened to the roof with two fasteners of the same type as that used for the field shakes. Fasteners shall be of sufficient length to penetrate the plywood panel or wood plank decking not less than 3/16 in.; or to penetrate into a 1 in., or greater, thickness of lumber not less than 1 in. Nails shall be driven straight and flush. Nails shall not be overdriven. (see Detail C).

5.11 Metal flashing materials shall comply with Section 1517.6 of the Florida Building Code, Building. Metal step flashing shall be used at all vertical side walls. The length of the step flashing units shall be 3 in. longer than the exposure of the shakes. The step-flashing unit shall be installed just up slope from the exposed area of the wood shake, in such a manner as to be covered by the next wood shake while maintaining a minimum 3 in. headlap. Step flashing metal shall extend 5 in. up the vertical surface and 5 in. horizontally onto the wood shake. Nail each step-flashing unit near the upper corner. Location of the shake fasteners must be adjusted to insure that the step flashing is not penetrated. Vertical head walls shall be flashed with apron type metal flashing. Wood shake shall be installed up to the vertical head wall. The head wall flashing shall then be installed to extend up the vertical surface 5 in., and out over the top course of wood shake a minimum of 5 in. Wall treatment or metal counterflashing shall be brought down over all vertical flanges of the step flashing or head wall flashing a minimum of 3 in. and shall terminate a minimum of 1 in. above the surface of the wood shake. Metal counterflashing shall be installed in compliance with RAS 111.

5.12 Roof penetrations that protrude through a roof shall be flashed at all intersecting angles to prevent leakage. Flashing details shall be in compliance with manufacturer's recommendations, unless otherwise indicated in roof assembly's Product Approval.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R10238**

77

Date Submitted	02/14/2022	Section	130	Proponent	Michael Silvers (FRSA)
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No** **Alternate Language No**

### Related Modifications

10175, 10176, 10179 and 10180

### Summary of Modification

Aligns the language for wood shakes and shingle installed over solid sheathing with other proposed HVHZ fastened underlayment changes and with the more stringent secondary water barrier requirements used in the rest of Florida. Adds ASTM D8257 synthetic underlayment.

### Rationale

Aligns the language for wood shakes and shingle installed over solid sheathing with other proposed HVHZ fastened underlayment changes and with the more stringent secondary water barrier requirements used in the rest of Florida. Adds ASTM D8257 synthetic underlayment.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

*Note: Tables remain unchanged*

## INSTALLATION CRITERIA FOR WOOD ROOF SHINGLES AND SHAKES APPLICATION

### 1. Scope

1.1 This application standard provides the minimum installation criteria for wood shingles and shakes application.

### 2. Definitions

2.1 For definitions of terms used in this application standard, refer to ASTM D1079 and the *Florida Building Code, Building*.

### 3. General

3.1 Maximum exposure for wood shingles and shakes shall comply with Table 1 herein, unless specifically specified in the roof assemblies Product Approval.

3.2 Wood shingles and shakes may be applied over solid or spaced sheathing. In spaced sheathing applications, the first 36 in. above the eave line shall be solidly sheathed. All wood decks shall comply with the provisions set forth in Chapters 15 and 23 (High-Velocity Hurricane Zones) of the *Florida Building Code, Building*.

3.3 Wood shingles and shakes shall not be installed on roof mean heights greater than 33 feet, unless specifically specified in the roof assemblies Product Approval.

### 4. Wood Shingles

#### 4.1 Underlayment

Solid Sheathing: ~~Two plies of ASTM D226, Type I felt overlapped 19 in., or a single layer of ASTM D226 Type II felt overlapped a minimum of 4 in. on side laps, and 6 in. on the end laps. 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 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 underlayment, overlapping successive sheets half the width of a full sheet plus 2 inches. End laps shall be 6 inches (152 mm) and shall be offset by 6 feet (1829 mm). Underlayment shall be fastened to a nailable deck 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 Fasteners d-with shall be corrosion resistant 12 ga. roofing nails through tin caps. Fasten with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c., and one row at the laps fastened 6 in. o.c.~~

Spaced Sheathing: Underlayment shall be installed at Aa minimum of 36 in. at the eave line, fastened with corrosion resistant 12 ga. roofing nails through tin caps. Fasten with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c.

Roofing nails shall be of sufficient length to penetrate through the plywood panel or wood plank decking not less than  $\frac{3}{16}$  in., or to penetrate into a 1 in., or greater, thickness of lumber not less than 1 in.

4.2 Edge metal shall comply with Section 1517.6 of the *Florida Building Code, Building*, and RAS 111.

4.3 Valleys may be installed open or closed. A 36 in. wide sheet of minimum ASTM D226 Type II organic felt or an Approved ASTM D1970 self-adhering polymer-modified underlayment shall be installed centered in the



valley, ASTM D226 Type II felt shall be fastened 6 in. o.c. through tin-caps at each edge of the sheet. Minimum end laps shall be 12 in. and fully adhered with approved flashing cement.

4.4 Valley metals shall comply with the Section 1517.6 of the *Florida Building Code, Building*. Valley metal shall be preformed with side returns and a minimum 1 in. high center water diverter. Valley metal shall have a minimum formed width of 20 in. Valley metal shall be fastened with minimum 2 in. wide metal clips spaced 12 in. o.c. Metal clips shall be fabricated of similar metal and fastened with minimum two approved 1<sup>1</sup>/<sub>4</sub> in. annular ring shank roofing nails at every clip (see Detail A).

4.5 Metal laps shall be a minimum of 12 in. and shall be sealed with approved flashing cement. For open valley installations, the wood shingles are to be cut to form a straight edge. The open area of the valley shall be no less than 4 in. and no more than 8 in. wide. For closed valley installations, the wood shingles are to be miter cut along the center water diverter. Wood shingle fasteners shall be kept back at least 8 in. from the valley centerline. Wider wood shingles and the positioning of the fasteners higher at the valley may be required.

4.6 The maximum exposure to the weather for wood shingle applications shall comply with Table 1 herein.

4.7 Reserved.

4.8 The beginning or starter course of wood shingles at the eave line shall be doubled as a minimum. The wood shingles shall be project a minimum <sup>3</sup>/<sub>4</sub> in. to a maximum of 2 in. beyond the drip edge at both eaves and rakes. Spacing between shingles (joints or keyways) shall be a minimum of <sup>1</sup>/<sub>4</sub> in. and a maximum of <sup>3</sup>/<sub>8</sub> in. Shingles shall be positioned so that they cover the joints in the preceding course and adjacent courses shall be offset a minimum of 1<sup>1</sup>/<sub>2</sub> in. In any three courses (adjacent), no two joints should be directly aligned (see Detail B).

4.9 Each shingle shall be fastened with a minimum of two (2) 5d hot-dipped, galvanized box nails. Fastened <sup>3</sup>/<sub>4</sub> in. to 1 in. from the edge of the shingle, and <sup>1</sup>/<sub>2</sub> in. to 2 in. above the butt line of the next course. In all cases, fasteners shall be of sufficient length to penetrate through the plywood panel or wood plank decking not less than <sup>3</sup>/<sub>16</sub> in., or to penetrate into a 1 in., or greater, thickness of lumber not less than 1 in. Nails shall be driven straight and flush. Nails shall not be overdriven (see Detail C).

4.10 Hip and ridges may be installed from pre-manufactured units or field assembled units from manufacturer's shingles. The exposed juncture of the roof hip and ridge areas shall be covered with a minimum 6 in. wide strip of ASTM D226 Type II organic felt, prior to installing the hip and ridge units. No felt shall be left exposed. Lay alternate overlapping hip and ridge units, starting with a double starter course. The weather exposure of the hip and ridge units shall be the same exposure as the field shingles. Each side of the hip and ridge units shall be a minimum of 4 in. wide. Each hip and ridge unit shall be fastened to the roof with two fasteners of the same type as that used for the field shingles. Fasteners shall be of sufficient length to penetrate the plywood panel or wood plank decking not less than <sup>3</sup>/<sub>16</sub> in.; or to penetrate into a 1 in., or greater, thickness of lumber not less than 1 in. Nails shall be driven straight and flush. Nails shall not be overdriven (see Detail C).

4.11 Metal flashing materials shall comply with Section 1517.6 of the *Florida Building Code, Building*. Metal step flashing shall be used at all vertical side walls. The length of the step flashing units shall be 3 in. longer than the exposure of the shingles. The step-flashing unit shall be installed just up slope from the exposed area of the wood shingle, in such a manner as to be covered by the next wood shingle, while maintaining a minimum 3 in. headlap. Step flashing metal shall extend 5 in. up the vertical surface and 5 in. horizontally onto the wood shingle. Nail each step-flashing unit near the upper corner. Location of the shingle fasteners must be adjusted to insure that the step flashing is not penetrated. Vertical head walls shall be flashed with apron type metal flashing. Wood shingles shall be installed up to the vertical head wall and out over the top course of wood shingles a minimum of 5 in. Wall treatment or flashing or headwall flashing a minimum of 3 in. and shall terminate a minimum of 1 in. above the surface of the wood shingles. Metal counter flashing shall be installed in compliance with Roofing Application Standard RAS 111.



4.12 Roof penetration that protrude through a roof shall be flashed at all intersecting angles to prevent leakage. Flashing details shall be in compliance with manufacturer's recommendations, unless otherwise indicated in roof assembly's Product Approval.

## 5. Wood Shakes

### 5.1 Underlayments:

Solid Sheathing: Underlayment shall be installed at a minimum of 36 in. at the eave line, with 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 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 underlayment, overlapping successive sheets half the width of a full sheet plus 2 inches. End laps shall be 6 inches (152 mm) and shall be offset by 6 feet (1829 mm). Underlayment shall be fastened to a nailable deck 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 fastened with corrosion resistant 12 ga. roofing nails through tin caps. Fasten with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c.

Spaced Sheathing: Underlayment shall be installed at a minimum of 36 in. wide course of underlayment shall be installed at the eave line. Underlayment shall be fastened with corrosion resistant 12 ga. roofing nails through tin caps. Fasten with two staggered rows in the field of the sheet with a maximum fastener spacing of 12 in. o.c. horizontally and vertically.

Roofing nails shall be of sufficient length to penetrate through the plywood panel or wood plank decking not less than  $\frac{3}{16}$  in., or to penetrate into a 1 in., or greater, thickness of lumber not less than 1 in.

5.2 Interlayment shall be a minimum of ASTM D226 Type I felt or an Approved ASTM D8257 synthetic underlayment with a minimum width of 18 in. and shall be applied between each succeeding course of shakes. Interlayment shall be fastened on the upper edge of the sheet. The bottom edge of the interlayment shall be positioned above the butt edge of each course of shakes, a distance equal to twice the weather exposure of the wood shakes. Extend interlayment up vertical surfaces a minimum of 4 in. No felt underlayment shall be exposed.

5.3 Edge metal shall comply with Section 1517.6 of the *Florida Building Code, Building* and RAS 111.

5.4 Valleys may be installed open or closed. A minimum 36 in. wide sheet of minimum ASTM D226 Type II organic felt or an Approved ASTM D8257 synthetic underlayment shall be installed over the underlayment and centered in the valley, fastened 6 in. o.c. through tin-caps at each edge of the sheet. Minimum end laps shall be 12 in. and fully adhered with approved flashing Approved roof cement.

5.5 Valley metals shall comply with the Section 1517.6 of the *Florida Building Code, Building*. Valley metal shall be preformed with side returns and a minimum 1 in. high center water diverter. Valley metal shall have a minimum formed width of 20 in. Valley metal shall be fastened with minimum 2 in. wide metal clips spaced 12 in. o.c. Metal clips shall be fabricated of similar metal and fastened with minimum two approved  $1\frac{1}{4}$  in. annular ring shank roofing nails at every clip (see Detail A).

5.6 Metal laps shall be a minimum of 12 in., and shall be sealed with approved flashing cement. For open valley installations, the wood shakes are to be cut to form a straight edge. The open area of the valley shall be no less than 4 in. and no more than 8 in. wide. For closed valley installations, the wood shakes are to be miter cut along the center water diverter. Wood shake fasteners shall be kept back at least 8 in. from the valley centerline. Wider wood shakes and the positioning of the fasteners higher at the valley may be required.

5.7 The maximum exposure to the weather for wood shakes shall comply with Table 1 herein. An interlayment sheet shall be installed between each shake. The beginning or starter course of wood shakes at the eave line shall be

doubled as a minimum. The wood shakes shall project a minimum  $\frac{3}{4}$  in. to a maximum 2 in. beyond the drip edge at both eaves and rakes.

5.8 Spacing between shakes (joints or keyways) shall be a minimum  $\frac{3}{8}$  in. and a maximum of  $\frac{5}{8}$  in. Shakes shall be positioned so that they cover the joints in the preceding course. Adjacent courses shall be offset a minimum of  $1\frac{1}{2}$  in. In any three courses (adjacent), no two joints should be directly aligned (see Detail D).

5.9 Each shake shall be fastened with a minimum of two (2) 6d hot-dipped, galvanized box nails. Fastened  $\frac{3}{4}$  in. to 1 in. from the edge of the shake, and  $1\frac{1}{2}$  in. to 2 in. above the butt line of the next course. In all cases, fasteners shall be of sufficient length to penetrate through the plywood panel or wood plank decking not less than  $\frac{3}{16}$  in., or to penetrate into a 1 in., or greater, thickness of lumber not less than 1 in. Nails shall be driven straight and flush. Nails shall not be overdriven (see Detail C).

5.10 Hip and ridges may be installed from pre-manufactured units or field assembled units from manufacturer's shakes. The exposed juncture of the roof hip and ridge areas shall be covered with a minimum 6 in. wide strip of ASTM D226 Type II organic felt, prior to installing the hip and ridge units. No felt shall be left exposed. Lay alternate overlapping hip and ridge units, starting with a double starter course. The weather exposure of the hip and ridge units shall be the same exposure as the field shingles. Each side of the hip and ridge units shall be a minimum of 4 in. wide. Each hip and ridge unit shall be fastened to the roof with two fasteners of the same type as that used for the field shakes. Fasteners shall be of sufficient length to penetrate the plywood panel or wood plank decking not less than  $\frac{3}{16}$  in.; or to penetrate into a 1 in., or greater, thickness of lumber not less than 1 in. Nails shall be driven straight and flush. Nails shall not be overdriven. (see Detail C).

5.11 Metal flashing materials shall comply with Section 1517.6 of the *Florida Building Code, Building*. Metal step flashing shall be used at all vertical side walls. The length of the step flashing units shall be 3 in. longer than the exposure of the shakes. The step-flashing unit shall be installed just up slope from the exposed area of the wood shake, in such a manner as to be covered by the next wood shake while maintaining a minimum 3 in. headlap. Step flashing metal shall extend 5 in. up the vertical surface and 5 in. horizontally onto the wood shake. Nail each step-flashing unit near the upper corner. Location of the shake fasteners must be adjusted to insure that the step flashing is not penetrated. Vertical head walls shall be flashed with apron type metal flashing. Wood shake shall be installed up to the vertical head wall. The head wall flashing shall then be installed to extend up the vertical surface 5 in., and out over the top course of wood shake a minimum of 5 in. Wall treatment or metal counterflashing shall be brought down over all vertical flanges of the step flashing or head wall flashing a minimum of 3 in. and shall terminate a minimum of 1 in. above the surface of the wood shake. Metal counterflashing shall be installed in compliance with RAS 111.

5.12 Roof penetrations that protrude through a roof shall be flashed at all intersecting angles to prevent leakage. Flashing details shall be in compliance with manufacturer's recommendations, unless otherwise indicated in roof assembly's Product Approval.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

R10140

78

Date Submitted	02/10/2022	Section	7.1	Proponent	Gaspar Rodriguez
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Correct a typo error. Text indicates Figure 4, it should be Figure 2.

### Rationale

Text indicates Figure 4, the correct image is Figure 2.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None.

**Impact to building and property owners relative to cost of compliance with code**

None.

**Impact to industry relative to the cost of compliance with code**

None.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes, corrects typo error.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Just correcting a typo error.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade, maintains same standard.

7.1 Eaves may be terminated with a drip edge flashing (see Figure 42) or a gutter at the transition with a side wall. Refer to material and application methods for fabrication, attachment, and sizing set forth in RAS 111.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

R10144

79

Date Submitted	02/10/2022	Section	7.3.2	Proponent	Gaspar Rodriguez
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Remove language that is not applicable to the section.

### Rationale

Gravel stop flashing is not used in metal roofing.

### Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None.

Impact to building and property owners relative to cost of compliance with code

None.

Impact to industry relative to the cost of compliance with code

None.

Impact to small business relative to the cost of compliance with code

### Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, provides more accurate language.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes, provides more accurate language.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

Does not degrade the effectiveness of the code

Does not degrade, provides more accurate language.

7.3.2 Rake flashings are perimeter flashings at the sloping edge of the metal Roof System Assembly, usually terminated with a drip edge or gravel-stop flashing (see Figure 4, below). Rake flashings shall be fabricated from materials, sized and attached in compliance with RAS 111.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R9906**

80

Date Submitted	01/14/2022	Section	7	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

9855

### Summary of Modification

Alignment of calibration frequency.

### Rationale

This modification adjusts the flow meter calibration frequency for TAS 100 to align it with the water distribution check—which is currently calibrated every six months—to create consistency for the laboratories conducting this test method. Companion MOD 9855 proposes changes in calibration intervals in TAS 100(A).

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement.

#### Impact to building and property owners relative to cost of compliance with code

No impact on cost of compliance with code. Standardizes calibration intervals.

#### Impact to industry relative to the cost of compliance with code

No impact on cost of compliance with code. Standardizes calibration intervals.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Standardizes calibration intervals within TAS 100.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Standardizes calibration intervals within TAS 100.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

**Does not degrade the effectiveness of the code**  
Standardizes calibration intervals within TAS 100.



**Revise TAS 100 as shown:**

- 7.2 Simulated Rainfall and Flow Meter Calibration - ~~A maximum of three months prior to conducting the test,~~  
The flow meter(s) shall be calibrated every six months using the following method:

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

R9908

81

Date Submitted	01/14/2022	Section	8	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Clarify test apparatus details.

### Rationale

A replacement for Figure 1 is proposed. The new drawing is properly proportioned, includes correct dimensions, and more accurately represents the test deck that is used. Section 8.1.2 is modified to clarify how adjustments to slope are made. Finally, the edition of TAS 100 is updated. TAS 100 has been modified in previous cycles, but the edition was not updated when that occurred.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

No impact to cost of compliance with code. Clarifies details of test apparatus.

#### Impact to industry relative to the cost of compliance with code

No impact to cost of compliance with code. Clarifies details of test apparatus.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Improves this test protocol by clarifying details of the test apparatus.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves this test protocol by clarifying details of the test apparatus.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

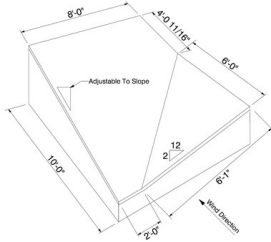
Does not discriminate.

**Does not degrade the effectiveness of the code**

Improves this test protocol by clarifying details of the test apparatus.

Revise TAS 100 as follows:

Replace existing Figure 1 with this version.



**FIGURE 1**

#### **WIND DRIVEN RAIN TEST FRAME**

Revise Section 8.1.2 as shown.

- 8.1.2 The wood test deck shall be positioned at the minimum slope, as applicable in the High-Velocity Hurricane Zone jurisdiction, for the type of discontinuous roof system being tested, but not less than 2 in:12 in. Adjustments to slope shall be made only to the 10-foot slope of the test deck.

Revise TAS 100 edition.

**TESTING APPLICATION STANDARD (TAS) No. 100-~~95~~23**  
**TEST PROCEDURE FOR WIND AND WIND DRIVEN RAIN**  
**RESISTANCE OF DISCONTINUOUS ROOF SYSTEMS**

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

R9907

82

Date Submitted	01/14/2022	Section	8	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Clarify test apparatus details.

### Rationale

This MOD replaces Figures 1A and 1B with new illustrations that are properly proportioned and more accurately represent the test deck that is used. Details about the test deck are relocated from Section 5 into Section 8 and additional clarifications—including acknowledgement that other methods besides a metal tray are permitted for collection of water—are proposed in Section 8 to align the text and Figures. Finally, the edition of TAS 100(A) is updated in conjunction with this change. TAS 100(A) has been modified in previous cycles, but the edition was not updated when that occurred.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

No impact to cost of compliance with code. Clarifies details of test apparatus.

#### Impact to industry relative to the cost of compliance with code

No impact to cost of compliance with code. Clarifies details of test apparatus.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Improves this test protocol by clarifying details of the test apparatus.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Improves this test protocol by clarifying details of the test apparatus.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

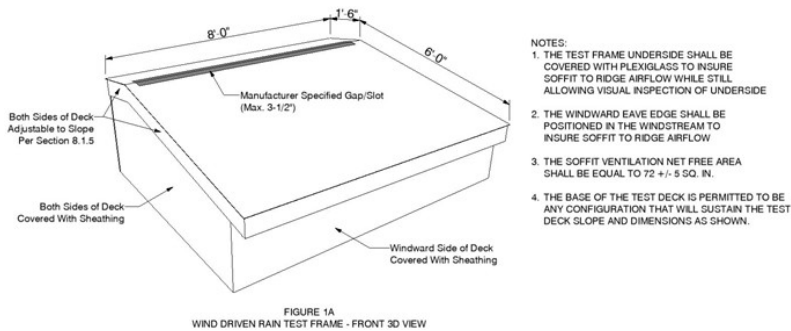
Does not discriminate.

**Does not degrade the effectiveness of the code**

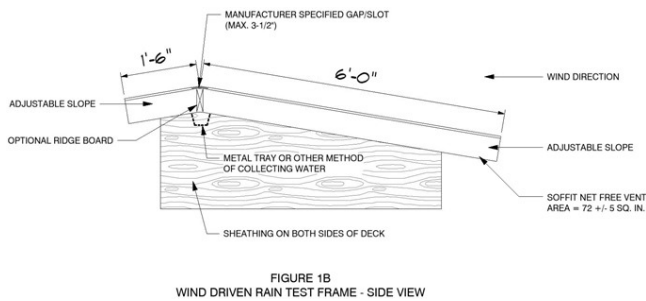
Improves this test protocol by clarifying details of the test apparatus.

Revise TAS 100(A) as follows:

Replace existing Figure 1A with this version.



Replace existing Figure 1B with this version.



Revise Section 5 as shown:

## 5. Apparatus

### 5.1 The Test Frame

5.1.1 The test frame shall consist of a base structure of sufficient dimensions to hold the test specimen noted in Section 8, constructed from wood or steel framing, and a wood deck, constructed from plywood sheathing. ~~Deck support joists shall be placed at 24 in. centers. (See Figure 1.) The deck slopes, on the windward and leeward side, shall be adjustable or multiple interchangeable decks shall be available to test assemblies at slopes of 2 in., 4 in. and 6 in. in 12 in.~~ The deck support assembly shall be capable of supporting not less than 55 lbs per square foot of dead load. The windward end and each side of the test frame shall be covered with plywood to insure soffit to ridge airflow.

Revise Section 8 as shown:

## 8. Test Specimens

## 8.1 Deck

8.1.1 The wood test deck shall consist of APA 32/16 span rated plywood sheathing of 15/32 in. thickness installed over 2 in.×6 in. perimeter supports and 2 in.×6 in. intermediate supports spaced 24 in. apart. The sheathing shall be attached with 8d common nails at 6 in. o.c. at panel edges and 12 in. o.c. at intermediate supports. The “windward deck” shall be 8' ft. wide by 6' ft. long and the leeward deck shall be 8' ft. wide by 1' ft. 6 in. long and shall overhang the leeward end of the test frame.

8.1.2 Sheathing panels, which meet at the ridge, shall be installed such that a gap exists along the ridge. The gap size shall be specified by the ridge ventilation system manufacturer, but shall not exceed 3.5 in. in width.

8.1.3 The type of soffit ventilation shall be specified by the ridge ventilation system manufacturer; but the net free area shall be equal to  $72 \pm 5 \text{ in}^2$ . The soffit ventilation assembly shall be installed beneath the windward eave of the test specimen. (See Figure 1B.)

8.1.3.1 The testing agency shall confirm that adequate soffit to ridge ventilation exists prior to conducting the wind driven rain test. Ventilation shall comply with the *Florida Building Code*. The net-free area of the ventilation products shall be recorded and reported in the test report.

8.1.4 A tray or other means of collecting water shall be installed on the underside of the ridge and/or deck area to capture any water which infiltrates the ridge area ventilation system. The tray or other means shall be sized and configured to insure that all water penetrating the ridge area ventilation system or the ventilation unit, is captured.

8.1.5 The wood test deck shall be positioned at the minimum slope, as applicable in the High-Velocity Hurricane Zones ~~jurisdiction~~, for the type of ridge area ventilation system being tested, but not less than 2 in:12 in. The deck slopes, on the windward and leeward side, shall be adjustable or multiple interchangeable decks shall be available to test assemblies at slopes of 2 in., 4 in. and 6 in. in 12 in. (See Figure 1B.)

Revise TAS 100(A) edition:

**TESTING APPLICATION STANDARD (TAS) No. 100(A)-~~95~~23**  
**TEST PROCEDURE FOR WIND AND WIND DRIVEN RAIN**  
**RESISTANCE AND/OR INCREASED WINDSPEED RESISTANCE OF**  
**SOFFIT VENTILATION STRIP AND CONTINUOUS OR INTERMITTENT**  
**VENTILATION SYSTEM INSTALLED AT THE RIDGE AREA**



# TAC: Roofing

Total Mods for Roofing in Pending Review : 93

Total Mods for report: 93

## Sub Code: Test Protocols

R9843

83

Date Submitted	01/14/2022	Section	23	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

Provide tolerances for test parameters.

### Rationale

This modification provides clarification that the control specimens for tensile adhesion of tile adhesives must be conditioned for at least 4 hours and removes the absolute time. It also adds a tolerance to the relative humidity requirement.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

Clarifies test parameters. No cost of compliance impact.

#### Impact to industry relative to the cost of compliance with code

Clarifies test parameters. No cost of compliance impact.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Provides tolerances for test parameters to clarify requirements.

#### Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Provides tolerances for test parameters to clarify requirements.

#### Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate.

#### Does not degrade the effectiveness of the code

Improves effectiveness of the code by clarifying test parameters.

**Revise TAS 103 as shown:**

- 23.3.2.1 Control specimens shall be conditioned at  $73.4 \pm 3.6^{\circ}\text{F}$  and  $50\% \pm 5\%$  relative humidity for minimum 4 hours.
- 23.3.2.2 All remaining specimens shall be conditioned at  $180 \pm 2^{\circ}\text{F}$  and  $65\% \pm 5\%$  relative humidity. Six specimens each shall be conditioned for 14, 60 and 120 days.
- 23.3.3 Test all samples in accordance with ASTM D1623. Testing shall be performed after a stabilization at  $73.4 \pm 3.6^{\circ}\text{F}$  and  $50\% \pm 5\%$  relative humidity.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R9844**

84

Date Submitted	01/14/2022	Section	10	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

9853, 9854

### Summary of Modification

Add alternative accelerated weathering option.

### Rationale

This modification adds an option that permits accelerated weathering per ASTM D4798 to evaluate both the potential for change in breaking strength and elongation (Section 9) and UV Resistance to visible deterioration (Section 12). An assessment for visible change is added to Section 20 to ensure post weathering visual changes are considered, as is currently required by Section 12. The assessment of visible deterioration added to Section 20 is appropriate to the harsher nature of the accelerated weathering imparted by ASTM D4798 relative to the Section 12 accelerated weathering protocol. Companion MOD 9844 proposes equivalent changes for TAS 103. MOD 9854 proposes changes to TAS 110 to align the extended exposure provisions for all underlayments.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement.

#### Impact to building and property owners relative to cost of compliance with code

No impact to cost of compliance with code.

#### Impact to industry relative to the cost of compliance with code

Offers alternative test path for product approval which may reduce compliance cost.

#### Impact to small business relative to the cost of compliance with code

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Provides alternative compliance option.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Alternative test option is equivalent or more stringent than current option.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Alternative test option may be employed by all products.

**Does not degrade the effectiveness of the code**

Improves code via alternative test option.

- 10.1.2.2 UV Exposure shall consist of 460 hours of continuous ultraviolet light exposure in accordance with the apparatus and configuration in 13.1.2.1 herein. Alternatively, exposure to accelerated weathering of no less than 500 hours in accordance with ASTM D4798, Cycle A-1 is permitted.
- 13.1 This test covers the determination of the ultraviolet resistance performance of materials specified in Section 1. Conducting accelerated weathering in accordance with Section 24 for a minimum of 500 hours is permitted as an alternative to this Section.
- 24.2.2 At the conclusion of the required accelerated weathering, the weathered underlayment shall be tested per Table 24.2. Any product not achieving the values therein will be considered as having failed the test. Additionally, there shall not be cracking of the surface layer or visible delamination between layers of the underlayment.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R10093**

85

Date Submitted	02/05/2022	Section	7	Proponent	Gaspar Rodriguez
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Revises test procedure for self-adhered underlayment used on roof tile installations.

### Rationale

This modification provides improved testing procedures that verify self-adhered underlayment installed on mechanically fastened anchor sheet meet the minimum requirements established by code. The changes are intended to more accurately reflect the performance of self-adhered underlayment when used as roof tile underlayment.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None.

**Impact to building and property owners relative to cost of compliance with code**

None.

**Impact to industry relative to the cost of compliance with code**

Product performance testing is an ongoing cost for product manufacturers, this testing will help manufacturers in verification of their product performance.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes, improves the verification of product performance.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes, improves the verification of product performance.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade, strengthens verification of product performance.



7.1 This test covers the determination of the wind uplift resistance of materials specified in Section 1 of this Protocol in accordance with TAS 114 Appendix C124 except as noted below.

#### 7.1.1 Test Deck Construction

7.1.1.1 Test is being conducted on materials noted in Section 1 of this Protocol; therefore, any reference to “roof membrane” in TAS 114 appendix C124 shall be regarded as ‘underlayment.’

7.1.1.2 Three (3) Four (4) 6'8" × 10'8" test decks shall be constructed of 40/20 19/32 in. APA Rated

Plywood Sheathing attached to wood joists spaced 24 o.c. Each test deck shall consist of four (4) panels — of said sheathing, the corners of which shall meet at the center of each test deck, leaving a 1/8 in. gap between panels. Plywood Sheathing shall be attached to wood joists with 8d ring shank nails spaced 6" o.c. at the panel edges and at intermediate supports.

7.1.1.3 To each test deck Adhere one (1) layer of the proposed TAS 103 self-adhered underlayment onto a mechanically attached, approved or prescriptive anchor sheet, which will be included within the product approval's scope of use, to each test deck.

#### 7.1.2 Procedure

7.1.2.1 Test shall be performed in an approved laboratory, test not a field test; therefore, any instruction in TAS 124 which references “building or outdoor conditions” shall be regarded as “laboratory conditions.”

7.1.2.2 Regulate the negative pressure in the chamber. Begin by raising the negative pressure in the chamber to 30 lbf/ft<sup>2</sup> and holding this pressure for one (1) minute. Thereafter, raise the negative pressure in increments of 15 lbf/ft<sup>2</sup>, holding each incremented pressure for one (1) minute, until the negative pressure has been held at 90 lbf/ft<sup>2</sup> for one (1) minute.

### 7.1.3 Report

7.1.3.1 Any test specimen which exhibits any significant separation between the membrane and tested substrate shall be considered as failing the wind uplift test.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R10175**

86

Date Submitted	02/14/2022	Section	103	Proponent	Michael Silvers (FRSA)
Chapter	1	Affects HVHZ	Yes	Attachments	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

10176, 10179, 10180 and 10238

### Summary of Modification

Changes the test methods used to establish resistance to uplift pressure for tile underlayments to methods described in the code. The underlayment is part of the load path for most tile roof systems and product approval should demonstrate an expected resistance to negative pressure.

### Rationale

The modification changes the test methods used to establish resistance to uplift pressure for tile underlayments to current methods described in the code for the testing of other non-air permeable membrane assemblies. The underlayment is part of the load path for most tile roof systems and product approval should demonstrate an expected resistance to negative pressure. Prescriptive methods described in the tile related RAS and TAS standards have been called into question. Underlayment applications described in the standards when tested using current performance testing standards indicate that some of the underlayment material and the fastener placement and density may not meet the current wind uplift resistance requirements based on ASCE-7. Test results from testing commissioned by FRSA using proposed test standards are attached and indicate very low resistance to uplift pressures for systems described in the RAS and TAS. The numbers shown are before applying the safety factor of two that further reduces the listed resistance of the underlayment. Independent testing by manufacturers of underlayment components produced similar results. The uplift resistance shown in many product approvals also confirms the need for these changes.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No impact.

**Impact to building and property owners relative to cost of compliance with code**

No impact.

**Impact to industry relative to the cost of compliance with code**

No impact.

**Impact to small business relative to the cost of compliance with code**

## **Requirements**

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**  
Yes.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade.

## 1. Scope

1.1 This Protocol covers procedures for testing self-adhering, ~~prefabricated~~, polymer modified bituminous, and solid thermoplastic sheet roofing materials intended for use as underlayment in Tile Roof Systems to assist in the waterproofing to function in combination with a Prepared Roof Covering. These products may employ granular or particulate surfacing materials on one side. The Granule Adhesion test shall be required for all granular surfaced materials used as a bonding surface for mortar or adhesive set tile systems.

1.2 The test procedures outlined in this Protocol cover the determination of the Wind Uplift Resistance; the Thickness; the Dimensional Stability; the Tear Resistance; the Breaking Strength; the Elongation; the Low Temperature Flexibility; the Ultraviolet Resistance; the Accelerated Aging Performance; the Cyclic Elongation Performance; the Water Vapor Transmission; the Compound Stability; the Puncture Resistance; the Tile Slip-page Resistance; the Peel Resistance; the Accelerated Weathering Performance of an underlayment material; the Tensile Adhesion properties of the exposed surface of the underlayment; and Granular Adhesion for granular surfaced underlayment.

*Note: 1.3 remains unchanged*

## 2. Referenced Documents

### 2.1 ASTM Test Standards:

D1079	Standard Definitions and Terms Relating to Roofing, Waterproofing and Bituminous Materials
D1623	Standard Test Method For Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics
D1970	Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection (Low Temperature Flexibility)
D2523	Testing Load-Strain Properties of Roofing Membranes
D4073	Standard Test Method For Tensile Tear Strength of Bituminous Roofing Membranes
D5147	Sampling and Testing Modified Bituminous Sheet Materials
E96	Water Vapor Transmission of Materials
E380	Excerpts from the Standard Practice for Use of the International System of Units (SI) (the Modernized Metric System)

### 2.3 Reserved

2.4 The Florida Building Code, Building.

### 2.5 ~~Application Standards~~ Reserved

TAS 124	<del>Test Procedure for Field Uplift Testing of Existing Membrane Roof Systems</del>
---------	--

*Note: 3., 4., 5., and 6. Remain unchanged.*

## **7. Wind Uplift**

7. Adhered or mechanically attached tile underlayment or underlayment assemblies shall be tested in accordance with FM 4474 or UL 1897.

-

7.1 This test covers the determination of the wind uplift resistance of materials specified in Section 1 of this Protocol in accordance with TAS 124 except as noted below.

### **7.1.1 Test Deck Construction**

7.1.1.1 Test is being conducted on materials noted in Section 1 of this Protocol; therefore, any reference to “roof membrane” in TAS 124 shall be regarded as “underlayment.”

7.1.1.2 Four (4) 8' × 8' test decks shall be constructed of 40/20 19/32 in. APA Rated Plywood Sheathing attached to wood joists spaced 24 o.c. Each test deck shall consist of four (4) panels of said sheathing, the corners of which shall meet at the center of each test deck, leaving a 1/8 in. gap between panels.

7.1.1.3 Adhere one (1) layer of underlayment to each test deck.

### **7.1.2 Procedure**

7.1.2.1 Test shall be a laboratory test not a field test; therefore, any instruction in TAS 124 which references “building or outdoor conditions” shall be regarded as “laboratory conditions.”

7.1.2.2 Regulate the negative pressure in the chamber. Begin by raising the negative pressure in the chamber to 30 lbf/ft<sup>2</sup> and holding this pressure for one (1) minute. Thereafter, raise the negative pressure in increments of 15 lbf/ft<sup>2</sup>, holding each incremented pressure for one (1) minute, until the negative pressure has been held at 90 lbf/ft<sup>2</sup> for one (1) minute.

### **7.1.3 Report**

7.1.3.1 Any test specimen which exhibits any significant separation between the membrane and tested substrate shall be considered as failing the wind uplift.



## PRI Construction Materials Technologies LLC

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Tampa, FL 33610  
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<https://www.pri-group.com/>

### Laboratory Test Report

<b>Report for:</b>	Mike Silvers FRSA 3855 N. Econlockhatchee Trail Orlando, FL 32817	
<b>Product Name:</b>	Self-adhered underlayment applied to ASTM D226 anchor sheet	
<b>Project No.:</b>	2368T0002	
<b>Dates Tested:</b>	May 10, 2021	
<b>Test Methods:</b>	UL 1897-12	
<b>Purpose:</b>	Determine uplift resistance in accordance with <b>UL 1897-12 Uplift Tests for Roof Covering Systems.</b>	
<b>Test Methods:</b>	Testing was completed as described in UL 1897-12 <i>Uplift Tests for Roof Covering Systems</i> . Specimens were incrementally loaded in accordance with UL 1897 until failure.	
<b>Deck Description:</b>	<b>Framing:</b>	2x10 No. 2 SYP lumber installed 24" o.c.
	<b>Deck:</b>	15/32 APA rated plywood sheathing installed over No. 2 lumber supports spaced 24" on center. Decking was attached with 2-3/8 inch x 0.113 inch ring shank nails spaced 6" o.c. along the perimeter and intermediate supports.
	<b>Underlayment:</b>	An anchor sheet of ASTM D226 type II material was mechanically attached to sheathed specimen with 12ga, 1-1/4 inch long, galvanized, ring shank, roofing nails placed through 32ga, 1-5/8 inch diameter tin caps (see Results Table for spacing details). A self-adhering underlayment was applied atop the mechanically attached anchor sheet in accordance with manufacturer's installation instructions. The laps of the self-adhered underlayment were backnailed with 12ga, 1-1/4 inch long, galvanized, ring shank, roofing nails placed through 32ga, 1-5/8 inch diameter tin caps and spaced 12 inches on center along the lap.

#### 2368T0002.1

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FRSA  
UL 1897 for  
Underlayment application  
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**Results:**

Table 1. Summary of Test Results

Specimen No.	Underlayment	Attachment	Passing Uplift Pressure (psf)	Failure Mode
1	2 / A	Fastened in lap 6 in o.c. 2 rows in the field @ 12 in o.c.	30	Fastener Pull-through
2	2 / A	Fastened in lap 6 in o.c. 3 rows in the field @ 8 in o.c.	45	Fastener Pull-through
3	2 / A	Plywood joints taped <sup>1</sup> Fastened in lap 6 in o.c. 3 rows in the field @ 8 in o.c.	60	Fastener Pull-through
4	2 / D	Fastened in lap 6 in o.c. 2 rows in the field @ 12 in o.c.	30	Fastener Pull-through
5	2 / D	Fastened in lap 6 in o.c. 3 rows in the field @ 8 in o.c.	60	Fastener Pull-through

Notes: 1 - Specimen #3 construction details included taping of the plywood joints with AAMA 711 compliant seam tape.

**Statement of Attestation:**

Testing was conducted in accordance with **UL 1897-12 Uplift Tests for Roof Covering Systems**. The test results and interpretations presented herein are representative of the materials supplied by the client.

Signed: \_\_\_\_\_

  
Jason Simmons  
Director

**Report Issue History:**

Issue #	Date	Pages	Revision Description (if applicable)
Original	07/07/2021	8	NA
Revision	07/14/2021	7	Remove product identification

**APPENDIX ATTACHED**

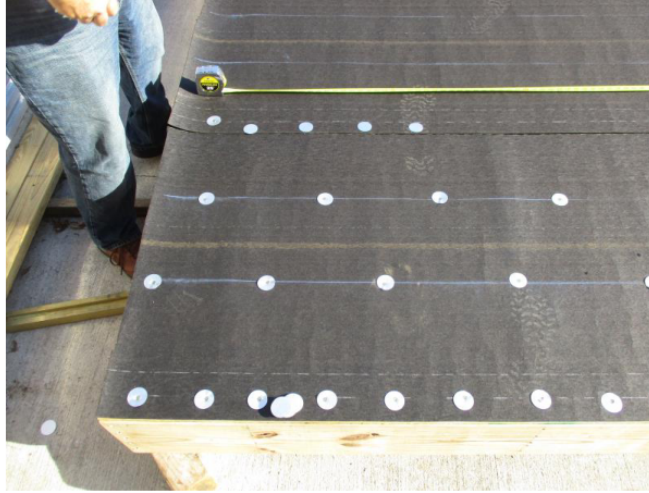
**Appendix A: Representative Photographs**

2368T0002.1

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Underlayment application  
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**Specimen #1 (typ.): Layout 6" OC in Lap and 2 rows at 12" OC in the field**



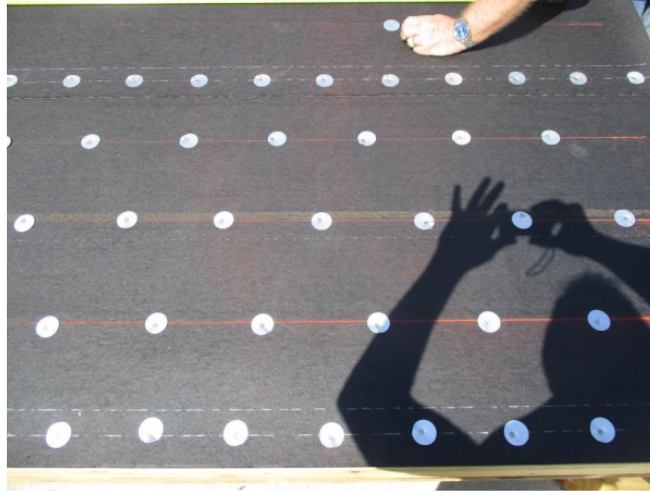
**Specimen #1 failure – fastener pull-through**

#### 2368T0002.1

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UL 1897 for  
Underlayment application  
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**Specimen #2 (typ.): Layout 6" OC in Lap and 3 rows at 8" OC in the field**



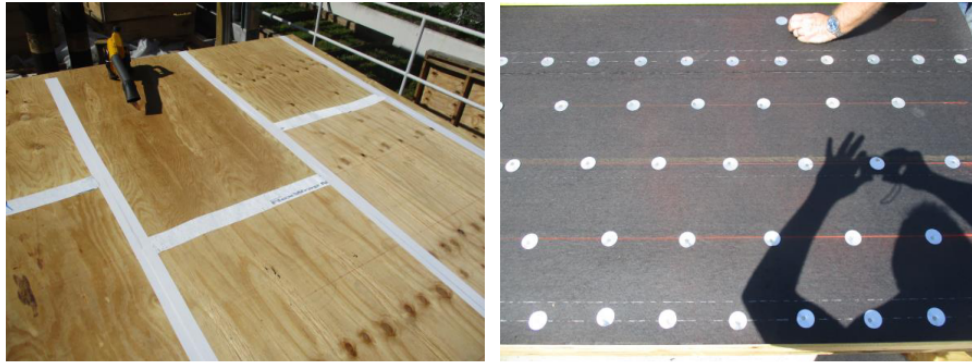
**Specimen #2 failure – fastener pull-through**

#### 2368T0002.1

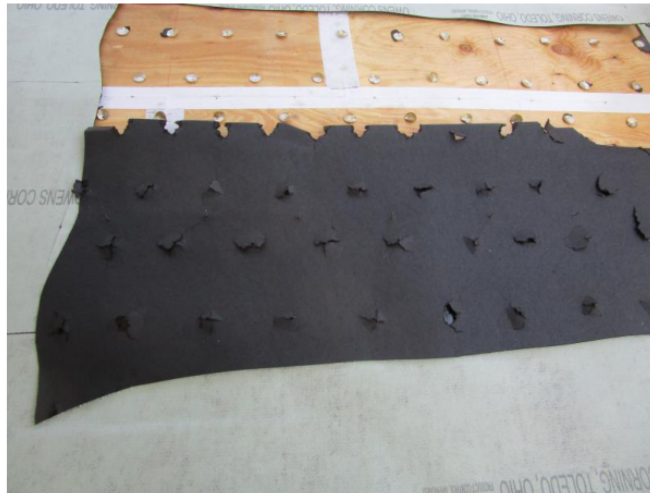
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FRSA  
UL 1897 for  
Underlayment application  
Page 5 of 7



**Specimen #3 (typ.): Layout 6" OC in Lap and 3 rows at 8" OC in the field over taped plywood joints**



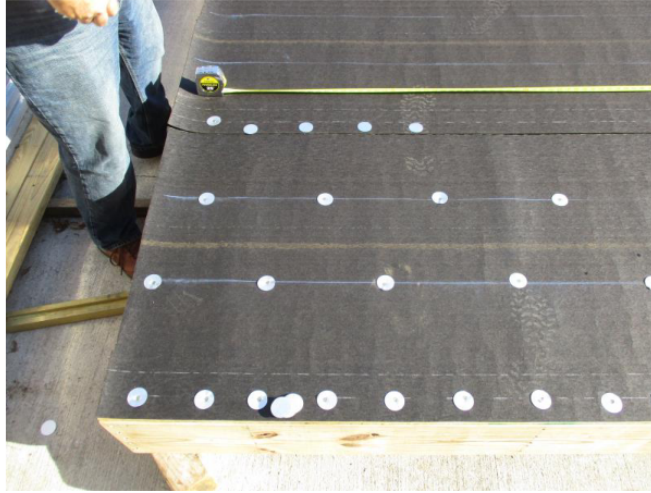
**Specimen #3 failure – fastener pull-through**

2368T0002.1

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FRSA  
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Underlayment application  
Page 6 of 7



**Specimen #4 (typ.): Layout 6" OC in Lap and 2 rows at 12" OC in the field**



**Specimen #4 failure – fastener pull-through**

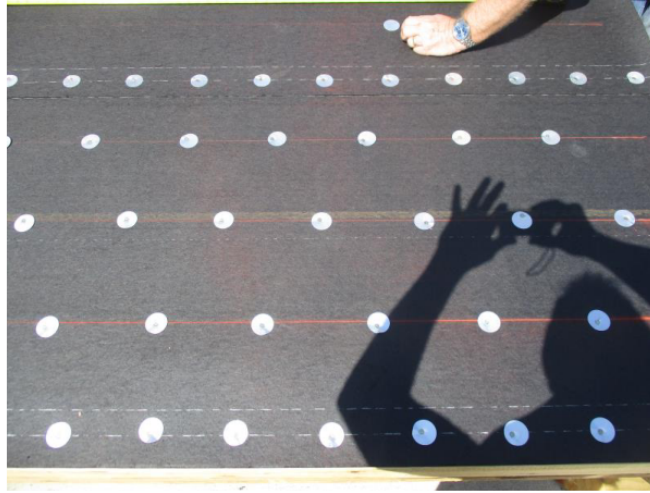
#### 2368T0002.1

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UL 1897 for  
Underlayment application  
Page 7 of 7



**Specimen #5 (typ.): Layout 6" OC in Lap and 3 rows at 8" OC in the field**



**Specimen #5 failure – fastener pull-through**

**END OF REPORT**

2368T0002.1

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**PRI Construction Materials Technologies LLC**

6412 Badger Drive

Tampa, FL 33610

813.621.5777

<https://www.pri-group.com/>**Test Status Email**

**Report for:** Mike Sivers  
FRSA  
3855 N. Econlockhatchee Trail  
Orlando, FL

**Product Name:** Various D226 30# underlayments and various self-adhering underlayments

**Project No.:** 2368T0001

**Dates Tested:** April 1, 2021 – April 2, 2021

**Test Methods:** ASTM D1876 T-peel  
TAS 117 (B) fastener pull-through

**Results Summary:** *See Results table herein*

Mike,

Per your request, PRI completed resistance to T-peel between PSU30 and four (4) different ASTM D226, 30# underlayments. Identifying the 30# with which the PSU30 adhered the best, we completed testing for adhesion between that underlayment and the other three (3) self adhered products.

Additionally, we completed fastener pull-through testing in accordance with TAS 117 (B) for the four 30# underlayments.

The results of testing can be found herein in the following two results tables.

Please pass this on to your counterparts in preparation for the assembly work next week.

Feel free to call or email with any questions:

-Jason

2368T0001

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FRSA  
ASTM D1876 and TAS 117 (B) for  
30# anchor sheets and sa underlayments  
Page 2 of 3

## ASTM D1876 T-Peel

Sample	Test Method	Results							
T-Peel Strength (lbf/in); 10 specimens; 1in x 12in; Test Rate @ 10in/min; Self adhered to anchor sheet	ASTM D1876								
1 / A		1	2	3	4	5	Avg.	St. Dev	
		1.18	1.01	1.01	1.46	0.88			
		6	7	8	9	10	Avg.	St. Dev	
		0.93	0.86	0.70	0.83	0.74			0.96
1 / B		1	2	3	4	5	Avg.	St. Dev	
		0.54	0.42	0.49	0.39	0.46			
		6	7	8	9	10	Avg.	St. Dev	
		0.73	0.40	0.41	0.49	0.50			0.48
1 / C		1	2	3	4	5	Avg.	St. Dev	
		0.36	0.26	0.37	0.35	0.35			
		6	7	8	9	10	Avg.	St. Dev	
		0.36	0.32	0.45	0.35	0.48			0.37
1 / D		1	2	3	4	5	Avg.	St. Dev	
		0.53	0.57	0.59	0.62	0.53			
		6	7	8	9	10	Avg.	St. Dev	
		0.58	0.47	0.56	0.53	0.45			0.54
2 / A		1	2	3	4	5	Avg.	St. Dev	
		1.00	1.10	1.06	1.26	1.16			
		6	7	8	9	10	Avg.	St. Dev	
		1.22	0.94	0.96	0.83	1.16			1.07
3 / A		1	2	3	4	5	Avg.	St. Dev	
		0.19	1.23	1.34	0.95	1.12			
		6	7	8	9	10	Avg.	St. Dev	
		0.92	0.82	0.88	0.80	1.32			1.05
4 / A		1	2	3	4	5	Avg.	St. Dev	
		0.40	0.35	0.45	0.41	0.55			
		6	7	8	9	10	Avg.	St. Dev	
		0.41	0.41	0.47	0.52	0.40			0.44

Notes: None

## 2368T0001

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FRSA  
 ASTM D1876 and TAS 117 (B) for  
 30# anchor sheets and sa underlayments  
 Page 3 of 3

TAS 117 (B) Fastener Pull-Through Resistance

Sample	Test Method	Results Maximum Load (lbf)									
Fastener Pull-Through Resistance (lbf) 14 specimens; 18" by 18"; Test Rate @ 2in/min	TAS 117 Appendix B										
A		1	2	3	4	5	6	7	Avg.	St. Dev	
		61.7	59.0	64.7	64.4	64.3	55.5	56.4			
		8	9	10	11	12	13	14			
		62.4	66.8	61.1	56.3	56.2	57.8	60.5			60.5
B		1	2	3	4	5	6	7	Avg.	St. Dev	
		41.0	51.0	56.0	49.1	49.6	46.8	53.7			
		8	9	10	11	12	13	14			
		40.9	52.6	36.2	44.8	44.5	45.9	44.7			46.9
C		1	2	3	4	5	6	7	Avg.	St. Dev	
		42.4	41.2	52.0	48.0	45.8	52.5	48.4			
		8	9	10	11	12	13	14			
		49.3	47.6	52.0	43.2	44.7	50.2	44.3			47.2
D		1	2	3	4	5	6	7	Avg.	St. Dev	
		81.9	84.9	91.9	86.8	83.9	83.7	80.9			
		8	9	10	11	12	13	14			
		82.9	78.6	83.5	82.4	89.7	86.8	83.9			84.4

Notes: None

## 2368T0001

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# FRSA Tile Underlayment Testing Confirms Concerns

Mike Silvers, CPRC, Silvers Systems Inc. and FRSA Director of Technical Services

In the May 2021 edition of Florida Roofing magazine, I wrote an article titled *Florida May Have a Flaw in Our Roofing Code Armor*. The article went into some detail about a possible problem with tile underlayment consisting of a nailed D226 #30 with a self-adhering underlayment applied to it. Self-adhering manufacturer's product approvals showed relatively low uplift resistance for these underlayment systems. The highest of those we found provided resistance of 45 psf with the safety factor of 2 accounted for. This means the product should have resistance of 90 psf during testing. The resistance stated in these product approvals would not meet the American Society of Civil Engineers (ASCE) 7-16 requirements in many areas of Florida.

FRSA was concerned that this prescriptive application was being used to circumvent the more

restrictive ASCE 7-16 compliant requirements of the 6<sup>th</sup> Edition FRSA-TRI Florida High Wind Concrete and Clay Tile Installation Manual. The manual has prescriptive methods for two ply hot mopped systems that include greatly enhanced fastening for the #30. For all other underlayments you need a product approval that meets the resistance values for your specific job based on the tables in the manual or engineering calculations that are based on ASCE 7-16.

In order to validate our concerns, the FRSA Education and Research Foundation provided funding, donated through an endowment by Bob Ferrante, that allowed us to conduct testing to verify the actual uplift resistance of this system. We began testing at the PRI facility in Tampa in April. Four different Miami-Dade approved ASTM D226 felts and four different self-adhering membranes were tested using TAS 117B

**Table 1 – TAS 117 (B) Fastener Pull-Through Resistance**

Sample	Test Method	Results – Maximum Load (lbf)									
Fastener Pull-Through Resistance (lbf) 14 Specimens; 18” by 18” Test Rate @ 2in/min	TAS 117 Appendix B										
A		1	2	3	4	5	6	7	Avg.	St. Dev.	
		61.7	59.0	64.7	64.4	64.3	55.5	56.4			
		8	9	10	11	12	13	14			
		62.4	66.8	61.1	56.3	56.2	57.8	60.5	60.5	3.7	
B		1	2	3	4	5	6	7	Avg.	St. Dev.	
		41.0	51.0	56.0	49.1	49.6	46.8	53.7			
		8	9	10	11	12	13	14			
		40.9	52.6	36.2	44.8	44.5	45.9	44.7	46.9	5.5	
C		1	2	3	4	5	6	7	Avg.	St. Dev.	
		42.4	41.2	52.0	48.0	45.8	52.5	48.4			
		8	9	10	11	12	13	14			
		49.3	47.6	52.0	43.2	44.7	50.2	44.3	47.2	3.7	
D		1	2	3	4	5	6	7	Avg.	St. Dev.	
		81.9	84.9	91.9	86.8	83.9	83.7	80.9			
		8	9	10	11	12	13	14			
		82.9	78.6	83.5	82.4	89.7	86.8	83.9	84.4	3.5	

for pull-through and ASTM D1876 adhesion peel test. The best performing of each were installed on five test decks. The #30 with best pull-through resistance (Product D in Table 1) and the one offering the best surface for adhesion (Product A in Table 1) were nailed using tin tabs/caps and ring shank nails into two decks using the standard pattern of 6" o.c. at the laps and two rows at 12" o.c. staggered in the field (per RAS), with three others using 6" o.c. at the laps and three rows at 8" o.c. staggered in the field. The best performing self-adhering membrane for adhesion (Product 2 in Table 2) was then applied to the two different #30 on all five decks. Approximately thirty days later, we tested them to failure in a bell chamber. The results were even lower than we had anticipated and very concerning. Tables 1-3 will show the test results.

You can see in Table 3 (page 18), that the Passing Uplift Pressure (psf) column in yellow shows for Specimen No. 1 and 4, which have the prescriptive nailing patterns, the passing pressures are 30 psf. When you apply the required safety factor of 2, it results in a final resistance pressure of 15 psf. This is very low and confirmed our previous concerns. You can also see that with minimally enhanced fastening and, in one specimen, by taping the joints of the plywood, it doubled the resistance. But when the safety factor of 2 is applied, the 60 psf becomes 30 psf. This is still very low. These values were much lower than known values for two-ply hot mopped systems, so the next question is why?

Table 2 – ASTM D1876 T-Peel

Sample	Test Method	Results							
T-Peel Strength (lbf/in); 10 specimens; 1in x 12in; Test Rate @ 10in/min; Self adhered to anchor sheet	ASTM D1876								
1 / A		1	2	3	4	5	Avg.	St. Dev	
		1.18	1.01	1.01	1.46	0.88			
		6	7	8	9	10			
		0.93	0.86	0.70	0.83	0.74			
1 / B		1	2	3	4	5	Avg.	St. Dev	
		0.54	0.42	0.49	0.39	0.46			
		6	7	8	9	10			
		0.73	0.40	0.41	0.49	0.50			
1 / C		1	2	3	4	5	Avg.	St. Dev	
		0.36	0.26	0.37	0.35	0.35			
		6	7	8	9	10			
		0.36	0.32	0.45	0.35	0.48			
1 / D		1	2	3	4	5	Avg.	St. Dev.	
		0.53	0.57	0.59	0.62	0.53			
		6	7	8	9	10			
		0.58	0.47	0.56	0.53	0.45			
2 / A		1	2	3	4	5	Avg.	St. Dev.	
		1.00	1.10	1.06	1.26	1.16			
		6	7	8	9	10			
		1.22	0.94	0.96	0.83	1.16			
3 / A		1	2	3	4	5	Avg.	St. Dev.	
		0.19	1.23	1.34	0.95	1.12			
		6	7	8	9	10			
		0.92	0.82	0.88	0.80	1.32			
4 / A		1	2	3	4	5	Avg.	St. Dev.	
		0.40	0.35	0.45	0.41	0.55			
		6	7	8	9	10			
		0.41	0.41	0.47	0.52	0.40			

The failure mode shown in the green column in Table 3 were fastener pull-through. The only place we experienced fastener pull out was in the backnailing where the self-adhering membrane being nailed

**Table 3 – Summary of Test Results (UL 1897-12)**

Specimen No.	Underlayment	Attachment	Passing Uplift Pressure	Failure Mode
1	2/A	Fastened in lap 6 in o.c. 2 rows in the field @ 12 in o.c.	30	Fastener Pull-through
2	2/A	Fastened in lap 6 in o.c. 3 rows in the field @ 8 in o.c.	45	Fastener Pull-through
3	2/A	Plywood joints taped <sup>1</sup> Fastened in lap 6 in o.c. 3 rows in the field @ 8 in o.c.	60	Fastener Pull-through
4	2/D	Fastened in lap 6 in o.c. 2 rows in the field @ 12 in o.c.	30	Fastener Pull-through
5	2/D	Fastened in lap 6 in o.c. 3 rows in the field @ 8 in o.c.	60	Fastener Pull-through

Note: 1 – Specimen #3 construction details including taping of the plywood joints with AAMA 711 compliant seam tape.

through added to the pull-through resistance. The pictures below show the bottom or underside of a tested underlayment and the fasteners that remain in the deck. Notice how the #30 felt is ripped and the tin tabs are deformed. Previously tested two-ply hot mopped underlayment failures were typically fastener pull out. So, there is clearly a difference in how the felt and tin tab interact with self-adhered versus hot mopped systems.

After a great deal of contemplation and discussion, we formed a hypothesis which I will attempt to explain. A mop is used to apply hot asphalt over a #30 and a nail/tin tag combination asphalt runs under and is applied over the tin tag. Then a second layer of compatible asphalt membrane is immediately applied. When the asphalt cools, the tin tag is sandwiched between these two asphaltic membranes creating a surrounding bond and, due to the rigidity achieved, helps to spread the fastener loading into the membranes. This bond locks the tin tag in and reinforces its resistance to tin tag deformation, as well as adding pull-through resistance to the interface. When using a self-adhering membrane, the adhesive does not solidify like asphalt, thereby leaving the tin tag #30 interface much weaker and, due to the flexible nature

of the completed membranes, susceptible to single fastener loading and pull-through failure mode (see photos below).

Having a better understanding of the low resistance to uplift pressure that these prescriptive #30 and self-adhering membrane underlayments provide and why, we noted that almost all testing was done exclusively with nail/tin tag fastening. This may be one area where a stiffer cap nail may increase performance. Base sheets with better pull-through resistance and surface for better adhesion is another possibility. The vacuum chamber testing performed did not achieve high enough pressures to evaluate the adhesion properties of the self-adhering membranes. The information available leads one to believe that a D226 #30 will not achieve adequate uplift resistance to be used as the base sheet in a two-ply self-adhered system. There is evidence that with the right base sheet and fastening – a two-ply system that includes a self-adhering top layer – a compliant underlayment system can be achieved. One important concern is the relatively high cost that will come with this option.

Regardless of why these underlayments don't provide better overall resistance values, it is clear that we need to rectify the problem so that future editions of



the Florida Building Code can address the issue. The 6<sup>th</sup> Edition FRSA-TRI tile manual deals with this issue but unfortunately the Miami-Dade Roofing Application Standards (RAS) do not. The RAS are referenced in the code for use outside of the High Velocity Hurricane Zone (HVHZ Miami-Dade and Broward counties). If we can address the prescriptive underlayment methods included in the RAS, we can rectify this problem. Many contractors, when working outside of the HVHZ, use underlayment applied direct to deck. These systems provide the highest uplift resistance at a cost that is less than the prescriptive option and even more cost effective when compared to conforming two-ply systems. As many of you know, direct to deck applications and fasteners without tin caps are not permitted for use in the HVHZ. The stance on the direct to deck application exists in conflict with RAS No. 118-20, 119-20 and 120-20 Underlayment Applications, E. Self-Adhered Underlayment (Single Ply). *A single-ply underlayment system utilizing any Product approved self-adhered underlayment. The roof cover is terminated at approved metal flashings. Apply one layer of any self-adhered underlayment in compliance with the underlayment manufacturers approved/requirements.* As stated earlier, this is a cost effective way to meet the uplift resistance required by the code and should be acceptable in the HVHZ as well.

With all of this in mind, the FRSA Codes Subcommittee allowed the research project task group, which includes Manny Oyola, Eagle Roofing Products, Greg Keeler, Owens Corning and me to arrange a meeting with officials at Miami-Dade to discuss our test results and look for ways to deal with the problem. I am very happy to report that our task group met with Jorge Acebo, Jamie Gascon, Alex Tigera and Gaspar Rodriguez of Miami-Dade County in early September. FRSA appreciates their willingness to openly exchange points of view, concerns and possible solutions. It was a very productive meeting. The Miami-Dade group are currently discussing their options and we agreed to try and work together to find a good resolution. I will report on our progress in future articles. Keeping the dialogue open, building consensus and forming coalitions with other industry groups is of the utmost importance when proposing and making code changes. We will attempt to do so whenever our interests align.

FRM

Mike Silvers, CPRC is owner of Silvers Systems Inc. and is consulting with FRSA as Director of Technical Services. Mike is an FRSA Past President, Life Member and Campanella Award recipient and brings over 45 years of industry knowledge and experience to FRSA's team.

# OSHA®-10

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# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R10182**

87

Date Submitted	02/14/2022	Section	9	Proponent	Greg Keeler
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Revises the jaw separation rate to increase efficiency of testing.

### Rationale

This modification revises the jaw separation rate for the Tear Resistance testing to increase efficiency of testing. Comparative testing to determine the impact of the separation rate change is underway.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None

**Impact to building and property owners relative to cost of compliance with code**

None

**Impact to industry relative to the cost of compliance with code**

None

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Yes

**Does not degrade the effectiveness of the code**

Does not degrade

## 9. Tear Resistance

- 9.1 This test covers the determination of the tear propagation resistance of materials specified in Section 1 of this Protocol in accordance with ASTM Test Method D4073, except as noted below.
- 9.1.1 The prescribed Test Method shall be run in both the machine and the cross-machine direction of the roll material.
- 9.1.2 The jaw separation rate shall be 2.0 in/min.  $\pm$  3.0 %
- 9.1.23 The final test report shall include average tear propagation force values and standard deviations of these values for both the machine and the cross-machine direction of the material.
- 9.1.34 Any test specimen which exhibits a tear propagation value less than 20 lbf (88.5 N) in either the machine or cross-machine directions shall be considered as failing the tear strength test.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R9853**

88

Date Submitted	01/14/2022	Section	9	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

9844, 9854

### Summary of Modification

Add alternative accelerated weathering option.

### Rationale

This modification adds an option that permits accelerated weathering per ASTM D4798 to evaluate both the potential for change in breaking strength and elongation (Section 9) and UV Resistance to visible deterioration (Section 12). An assessment for visible change is added to Section 20 to ensure post weathering visual changes are considered, as is currently required by Section 12. The assessment of visible deterioration added to Section 20 is appropriate to the harsher nature of the accelerated weathering imparted by ASTM D4798 relative to the Section 12 accelerated weathering protocol. Companion MOD 9844 proposes equivalent changes for TAS 103. MOD 9854 proposes changes to TAS 110 to align the extended exposure provisions for all underlayments.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement.

#### Impact to building and property owners relative to cost of compliance with code

No impact to cost of compliance with code.

#### Impact to industry relative to the cost of compliance with code

Offers alternative test path for product approval which may reduce compliance cost.

#### Impact to small business relative to the cost of compliance with code

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Provides alternative compliance option.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Alternative test option is equivalent or more stringent than current option.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Alternative test option may be employed by all products.

**Does not degrade the effectiveness of the code**

Improves code via alternative test option.



**Revise TAS 104 as shown:**

- 9.1.2.2 UV Exposure shall consist of 460 hours of continuous ultraviolet light exposure in accordance with the apparatus and configuration in ~~12.1.2.2~~ herein. Alternatively, exposure to accelerated weathering of no less than 500 hours in accordance with ASTM D4798, Cycle A-1 is permitted.
- 12.1 This test covers the determination of the ultraviolet resistance performance of materials specified in Section 1. Conducting accelerated weathering in accordance with Section 20 for a minimum of 500 hours is permitted as an alternative to this Section.
- 20.2.2 At the conclusion of the required accelerated weathering, the weathered underlayment shall be tested per Table 20.2. Any product not achieving the values therein will be considered as having failed the test. Additionally, there shall not be cracking of the surface layer or visible delamination between layers of the underlayment.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R9854**

89

Date Submitted	01/14/2022	Section	9	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

9844, 9853

### Summary of Modification

Provisions for underlayment exposure periods beyond thirty days.

### Rationale

This modification makes several clarifications to the footnotes of TAS 110 Tables 9, 10, 11(B), and 17, which provide the requirements for representing exposure periods beyond 30 days for underlayments other than those qualified via TAS 103 and TAS 104. Among the clarifications is addition of a pointer to TAS 103, Table 24.1 for the hours of accelerated weathering required to represent various extended exposure periods. A new provision is added to require a visual assessment in addition to the currently required physical property tests. The intent is to clarify and harmonize the extended exposure requirements of TAS 110 with those of TAS 103 and TAS 104, which have similar changes proposed in separate MODs 9844 and 9853. With the proposed additions, the parenthetical exception for TAS 103 and TAS 104 underlayments is no longer necessary.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

No impact to local entity enforcement.

#### Impact to building and property owners relative to cost of compliance with code

No impact to cost of compliance with code.

#### Impact to industry relative to the cost of compliance with code

Clarifies provisions for exposure period beyond thirty days.

#### Impact to small business relative to the cost of compliance with code

### Requirements

#### Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Clarifies requirements to represent an exposure period beyond thirty days.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Removes ambiguity about test requirements associated with exposure periods beyond thirty days. Adds additional criteria for product assessment.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Applicable to all products evaluated to TAS 110.

**Does not degrade the effectiveness of the code**

Removes ambiguity.

## Revise TAS 110 as shown:

### Table 9 Footnote

All underlayments (~~with the exception of TAS 103 or TAS 104 underlayments~~) with exposure limitation in excess of 30 days ~~shall be exposed to must submit enhanced~~ Accelerated Weathering testing in conjunction with applicable the following ~~Pphysical Pproperties~~: breaking strength, elongation, and low temperature flexibility. ~~testing.~~ ~~Exposure limitations up to a maximum of 180 days will be established through~~ Underlayments shall be exposed in accordance with ASTM D4798 for 1000 hours (cycle A-1); ~~Exposure limitations shall be established per TAS 103, Table 24.1. pPass/fail criteria shall be established by physical properties requirements of the standard under which the product is approved. Additionally, there shall not be cracking of the surface layer or visible delamination between layers of the underlayment. testing of the weathered samples. Physical property testing where specimen size will not fit into the accelerated weathering device may be omitted.~~

### Table 10 Footnote

All underlayments (~~with the exception of TAS 103 or TAS 104 underlayments~~) with exposure limitation in excess of 30 days ~~shall be exposed to must submit enhanced~~ Accelerated Weathering testing in conjunction with applicable the following ~~Pphysical Pproperties~~: breaking strength, elongation, and low temperature flexibility. ~~testing.~~ ~~Exposure limitations up to a maximum of 180 days will be established through~~ Underlayments shall be exposed in accordance with ASTM D4798 for 1000 hours (cycle A-1); ~~Exposure limitations shall be established per TAS 103, Table 24.1. pPass/fail criteria shall be established by physical properties requirements of the standard under which the product is approved. Additionally, there shall not be cracking of the surface layer or visible delamination between layers of the underlayment. testing of the weathered samples. Physical properties testing where specimen size will not fit into the accelerated weathering device may be omitted.~~

### Table 11 (B) Footnote 3

All underlayments (~~with the exception of TAS 103 or TAS 104 underlayments~~) with exposure limitation in excess of 30 days ~~shall be exposed to must submit enhanced~~ Accelerated Weathering testing in conjunction with applicable the following ~~Pphysical Pproperties~~: breaking strength, elongation, and low temperature flexibility. ~~testing.~~ ~~Exposure limitations up to a maximum of 180 days will be established through~~ Underlayments shall be exposed in accordance with ASTM D4798 as outlined in ASTM D5147 for 1000 hours (cycle A-1); ~~Exposure limitations shall be established per TAS 103, Table 24.1. pPass/fail criteria shall be established by physical properties requirements of the standard under which the product is approved. Additionally, there shall not be cracking of the surface layer or visible delamination between layers of the underlayment. testing of the weathered samples. Physical properties testing where specimen size will not fit into the accelerated weathering device may be omitted.~~

### Table 17 Footnote

All underlayments (~~with the exception of TAS 103 or TAS 104 underlayments~~) with exposure limitation in excess of 30 days ~~shall be exposed to must submit enhanced~~ Accelerated Weathering testing in conjunction with applicable the following ~~Pphysical Pproperties~~: breaking strength, elongation, and low temperature flexibility. ~~testing.~~

~~Exposure limitations up to a maximum of 180 days will be established through~~ Underlayments shall be exposed in accordance with ASTM D4798 for 1000 hours (cycle A-1); ~~Exposure limitations shall be established per TAS 103, Table 24.1, p~~Pass/fail criteria shall be established by physical properties requirements of the standard under which the product is approved. Additionally, there shall not be cracking of the surface layer or visible delamination between layers of the underlayment. ~~testing of the weathered samples. Physical properties testing where specimen size will not fit into the accelerated weathering device are not required to be included.~~

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R10097**

90

Date Submitted	02/05/2022	Section	11	Proponent	Gaspar Rodriguez
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Add a section adhesive used to set Roof Tile in Table 11A. Correct a typo error on test standard to be used for Protruding Ridge Ventilation products in Table 14.

### Rationale

Table 11 added section just saves times for customers needing the reference for testing standards required. Table 14 corrects a typo error.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None.

**Impact to building and property owners relative to cost of compliance with code**

None.

**Impact to industry relative to the cost of compliance with code**

None.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Added language simplifies the process of finding correct Test Standards requirements.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Makes code simpler to use.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Does not degrade code.

**Table 11(A)**

Product	Test	TestStandard
Mechanically Attached Rigid, Discontinuous Roof Assembly	Wind Driven Resistance	TAS 100
Mechanically Attached Rigid, Discontinuous Roof Assembly	Static Uplift Resistance	TAS 102
Mechanically Attached Clipped, Rigid, Discontinuous Roof Assembly	Static Uplift Resistance	TAS 102(A)
Mortar or Adhesive Set Tile Roof Assembly	Static Uplift Resistance	TAS 101
Rigid, Discontinuous Roof Assembly	Wind Tunnel Performance	TAS 108
Rigid, Discontinuous Roof Assembly	Air Permeability	TAS 116
Concrete Roof Tile	Physical Properties	TAS 112
Clay Roof Tile	Physical Properties	C1167
Fiberglass Reinforced Composite Tile	Physical Properties	TAS 135
<b>Underlayment</b>		
Self-Adhered Underlayments	Physical Properties	TAS 103
Nail-On Underlayments	Physical Properties	TAS 104
Asphalt Based Underlayments	Physical Properties	See Section 2 of this Protocol
<b>Attachment Components</b>		
Nails, Screws, Clips, etc.	Corrosion Resistance	Appendix E of TAS 114
Adhesive (for use in adhesive set tile Roof System Assemblies)	Physical Properties	See Section 1523.6.5.2.17 of Florida Building Code – Building
-	-	-
Mortar (for use in mortar set tile Roof System Assemblies)	Physical Properties	TAS 123
Adhesive (for use as a repair or supplemental attachment component)	Physical Properties	TAS 123(A)

**Table 14**

Product	Test	TestStandard
Attic Ventilation Products ( <i>soffit vents, ridge vents, static vents, louvers, turbines, powered vents, etc.</i> )	Wind and Wind Driven Rain Resistance	TAS 100(A)



'Small' Protruding Ridge Ventilation Products ( <i>static vents, louvers, turbines, powered vents, etc.</i> )	Increased Wind Speed Resistance	TAS 100(A)
'Large' Protruding Ridge Ventilation Products ( <i>turbines, powered vents, etc.</i> )	Pressure Resistance	<del>TAS 100(B)</del> TAS 202
Plastic Ridge Vents	Ultraviolet Resistance	ASTM G155
Plastic Ridge Vents	Burning Resistance	<del>ASTM</del> D635 or D1929

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R10146**

91

Date Submitted	02/10/2022	Section	2	Proponent	Greg Keeler
Chapter	1	Affects HVHZ	Yes	Attachments	Yes
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments** No

**Alternate Language** No

### Related Modifications

1518.4, RAS 115, RAS 130, TAS 110, Chapter 35

### Summary of Modification

Inserts ASTM D8257, the only consensus Standard that applies to synthetic underlayments.

### Rationale

Inserts ASTM D8257, the only consensus Standard that applies to synthetic underlayments.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

No

**Impact to building and property owners relative to cost of compliance with code**

No

**Impact to industry relative to the cost of compliance with code**

No

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Yes

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Yes

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Yes

**Does not degrade the effectiveness of the code**

Yes

TABLE 2(A)

PRODUCT	TEST STANDARD
<b>Membrane or Roll Roofing Products</b>	
Asphalt Coated Fiberglass Base Sheet	D4601
Asphalt Glass Felt for Roofing	D2178
Asphalt Coated Fiberglass Vented Base	D4897
Asphalt Coated Organic Base Sheet	D2626
Asphalt Organic Roll Roofing	D6380 Class WS
Asphalt Saturated Felt	D226
<u>Synthetic Roof Underlayment</u>	<u>D8257</u>
Roll Roofing, Glass Mat, Granule Surface	D3909
Roll Roofing, Organic, Smooth Surface	D6380 Class S
Roll Roofing, Organic, Granule Surface	D6380 Class M
SBS Polyester & Glass Fiber Reinforced	D6162
SBS Glass Fiber Reinforced	D6163
SBS Polyester Reinforced	D6164
APP Polyester Reinforced	D6222
APP Polyester & Glass Fiber Reinforced	D6223
SBS with Metallic Laminate Surfacing	D6298
APP Base Sheet Glass Fiber Reinforced	D6509
Accelerated Weathering all membranes Specified for use as capsheets <sup>1</sup>	D5147
Mechanically Attached Anchor or Base Sheets	TAS 117(B)

TABLE 9

Product	Test	Test Standard
Fiber Cement Roof Assembly	Wind Driven Rain Resistance	TAS 100
Fiber Cement Roofing Products	Physical Properties	TAS 135
Mechanical Attached Fiber Cement Tile or Shake Roof Assemblies (Uplift Based System)	Static Uplift Resistance	TAS 102(A) (See TAS 135 for details)
Mechanically Attached, Clipped Fiber Cement Tile or Shake Roof Assemblies (Uplift Based System)	Static Uplift Resistance	TAS 102(A) (See TAS 135 for details)
Fiber Cement Panel Roof Assemblies	Uplift Pressure Resistance	E 330 (See TAS 135 for details)

Underlayment		
Self-Adhered Underlayments	Physical Properties	TAS 103
Nail-On Underlayments	Physical Properties	TAS 104
<u>Synthetic Underlayments</u>	<u>Physical Properties</u>	<u>ASTM D8257</u>
Asphalt Based Underlayments	Physical Properties	See Section 2 of this Protocol
Attachment Components		
Nails, Screws, Clips, etc.	Corrosion Resistance	Appendix E of TAS 114

TABLE 10

Product	Test	Test Standard
Non-Rigid, Discontinuous Roof Assembly	Wind Driven Rain Resistance	TAS 100
Non-Rigid, Discontinuous Roof Assembly	Wind Resistance	TAS 107
Non-Rigid, Discontinuous Roof Assembly	Fire Resistance min. Class 'B'	E108 min. Class 'B'
Granule Surfaced, Glass Felt Asphalt Shingles	Physical Properties	D3462
Granule Surfaced, Class 'A' Asphalt Shingles Fiberglass Reinforced	Physical Properties	D3018 TAS 135
Composite Shingles Fiber Cement Shingles	Physical Properties	TAS 135
Metal Shingles	Salt Spray and Accelerated Weathering	B117 and G23
Underlayment		
Self-Adhered Underlayments	Physical Properties	TAS 103 or ASTM D1970
Nail-On Underlayments	Physical Properties	TAS 104
<u>Synthetic Underlayments</u>	<u>Physical Properties</u>	<u>ASTM D8257</u>
Asphalt Based Underlayments	Physical Properties	See Section 2 of this Protocol
Attachment Components		
Nails, Screws, Clips, etc.	Corrosion Resistance	Appendix E of TAS 114

TABLE 11(A)

Product	Test	Test Standard
Mechanically Attached Rigid, Discontinuous Roof Assembly	Wind Driven Resistance	TAS 100
Mechanically Attached Rigid, Discontinuous Roof Assembly	Static Uplift Resistance	TAS 102
Mechanically Attached Clipped, Rigid, Discontinuous Roof Assembly	Static Uplift Resistance	TAS 102(A)
Mortar or Adhesive Set Tile Roof Assembly	Static Uplift Resistance	TAS 101

Rigid, Discontinuous Roof Assembly	Wind Tunnel Performance	TAS 108
Rigid, Discontinuous Roof Assembly	Air Permeability	TAS 116
Concrete Roof Tile	Physical Properties	TAS 112
Clay Roof Tile	Physical Properties	C1167
Fiberglass Reinforced Composite Tile	Physical Properties	TAS 135
<b>Underlayment</b>		
Self-Adhered Underlayments	Physical Properties	TAS 103
Nail-On Underlayments	Physical Properties	TAS 104
<u>Synthetic Underlayments</u>	<u>Physical Properties</u>	<u>ASTM D8257</u>
Asphalt Based Underlayments	Physical Properties	See Section 2 of this Protocol
<b>Attachment Components</b>		
Nails, Screws, Clips, etc.	Corrosion Resistance	Appendix E of TAS 114
Mortar (for use in mortar set tile Roof System Assemblies)	Physical Properties	TAS 123
Adhesive (for use as a repair or supplemental attachment component)	Physical Properties	TAS 123(A)

TABLE 11(B)

Product	Test	Test Standard
Slate	Physical Properties	C406
<b>Underlayment</b>		
Self-Adhered Underlayments	Physical Properties	TAS 103 or ASTM D1970
Nail-On Underlayments	Physical Properties	TAS 104
<u>Synthetic Underlayments</u>	<u>Physical Properties</u>	<u>ASTM D8257</u>
Asphalt Based Underlayments	Physical Properties	See Section 2 of this Protocol
<b>Attachment Components</b>		
Nails, Screws, Clips, etc.	Corrosion Resistance	Appendix E of TAS 114

TABLE 17

Add ASTM D8257 to Table 17, similar to above tables. See PDF for details.

**Testing Application Standards****TAS 110****TABLE 2(A)**

PRODUCT	TEST STANDARD
<b>Membrane or Roll Roofing Products</b>	
Asphalt Coated Fiberglass Base Sheet	D4601
Asphalt Glass Felt for Roofing	D2178
Asphalt Coated Fiberglass Vented Base	D4897
Asphalt Coated Organic Base Sheet	D2626
Asphalt Organic Roll Roofing	D6380 Class WS
Asphalt Saturated Felt	D226
<u>Synthetic Roof Underlayment</u>	<u>D8257</u>
Roll Roofing, Glass Mat, Granule Surface	D3909
Roll Roofing, Organic, Smooth Surface	D6380 Class S
Roll Roofing, Organic, Granule Surface	D6380 Class M
SBS Polyester & Glass Fiber Reinforced	D6162
SBS Glass Fiber Reinforced	D6163
SBS Polyester Reinforced	D6164
APP Polyester Reinforced	D6222
APP Polyester & Glass Fiber Reinforced	D6223
SBS with Metallic Laminate Surfacing	D6298
APP Base Sheet Glass Fiber Reinforced	D6509
Accelerated Weathering all membranes Specified for use as capsheets <sup>1</sup>	D5147
Mechanically Attached Anchor or Base Sheets	TAS 117(B)

**TABLE 9**

Product	Test	Test Standard
Fiber Cement Roof Assembly	Wind Driven Rain Resistance	TAS 100
Fiber Cement Roofing Products	Physical Properties	TAS 135
Mechanical Attached Fiber Cement Tile or Shake Roof Assemblies (Uplift Based System)	Static Uplift Resistance	TAS 102(A) (See TAS 135 for details)
Mechanically Attached, Clipped Fiber Cement Tile or Shake Roof Assemblies (Uplift Based System)	Static Uplift Resistance	TAS 102(A) (See TAS 135 for details)
Fiber Cement Panel Roof Assemblies	Uplift Pressure Resistance	E 330 (See TAS 135 for details)
<b>Underlayment</b>		

Self-Adhered Underlayments	Physical Properties	TAS 103
Nail-On Underlayments	Physical Properties	TAS 104
<u>Synthetic Underlayments</u>	<u>Physical Properties</u>	<u>ASTM D8257</u>
Asphalt Based Underlayments	Physical Properties	See Section 2 of this Protocol
<b>Attachment Components</b>		
Nails, Screws, Clips, etc.	Corrosion Resistance	Appendix E of TAS 114

**TABLE 10**

Product	Test	Test Standard
Non-Rigid, Discontinuous Roof Assembly	Wind Driven Rain Resistance	TAS 100
Non-Rigid, Discontinuous Roof Assembly	Wind Resistance	TAS 107
Non-Rigid, Discontinuous Roof Assembly	Fire Resistance min. Class 'B'	E 108 min. Class 'B'
Granule Surfaced, Glass Felt Asphalt Shingles	Physical Properties	D3462
Granule Surfaced, Class 'A' Asphalt Shingles Fiberglass Reinforced	Physical Properties	D3018 TAS 135
Composite Shingles Fiber Cement Shingles	Physical Properties	TAS 135
Metal Shingles	Salt Spray and Accelerated Weathering	B117 and G23
<b>Underlayment</b>		
Self-Adhered Underlayments	Physical Properties	TAS 103 or ASTM D1970
Nail-On Underlayments	Physical Properties	TAS 104
<u>Synthetic Underlayments</u>	<u>Physical Properties</u>	<u>ASTM D8257</u>
Asphalt Based Underlayments	Physical Properties	See Section 2 of this Protocol
<b>Attachment Components</b>		
Nails, Screws, Clips, etc.	Corrosion Resistance	Appendix E of TAS 114

**TABLE 11(A)**

Product	Test	Test Standard
Mechanically Attached Rigid, Discontinuous Roof Assembly	Wind Driven Resistance	TAS 100
Mechanically Attached Rigid, Discontinuous Roof Assembly	Static Uplift Resistance	TAS 102



Mechanically Attached Clipped, Rigid, Discontinuous Roof Assembly	Static Uplift Resistance	TAS 102(A)
Mortar or Adhesive Set Tile Roof Assembly	Static Uplift Resistance	TAS 101
Rigid, Discontinuous Roof Assembly	Wind Tunnel Performance	TAS 108
Rigid, Discontinuous Roof Assembly	Air Permeability	TAS 116
Concrete Roof Tile	Physical Properties	TAS 112
Clay Roof Tile	Physical Properties	C 1167
Fiberglass Reinforced Composite Tile	Physical Properties	TAS 135
<b>Underlayment</b>		
Self-Adhered Underlayments	Physical Properties	TAS 103
Nail-On Underlayments	Physical Properties	TAS 104
<u>Synthetic Underlayments</u>	<u>Physical Properties</u>	<u>ASTM D8257</u>
Asphalt Based Underlayments	Physical Properties	See Section 2 of this Protocol
<b>Attachment Components</b>		
Nails, Screws, Clips, etc.	Corrosion Resistance	Appendix E of TAS 114
Mortar (for use in mortar set tile Roof System Assemblies)	Physical Properties	TAS 123
Adhesive (for use as a repair or supplemental attachment component)	Physical Properties	TAS 123(A)

**TABLE 11(B)**

Product	Test	Test Standard
Slate	Physical Properties	C406
<b>Underlayment</b>		
Self-Adhered Underlayments	Physical Properties	TAS 103 or ASTM D1970
Nail-On Underlayments	Physical Properties	TAS 104
<u>Synthetic Underlayments</u>	<u>Physical Properties</u>	<u>ASTM D8257</u>
Asphalt Based Underlayments	Physical Properties	See Section 2 of this Protocol
<b>Attachment Components</b>		
Nails, Screws, Clips, etc.	Corrosion Resistance	Appendix E of TAS 114

**TABLE 17**

Product	Test	Test Standard
Non-Rigid, Discontinuous Roof Assembly	Wind Driven Rain Resistance	TAS 100
Plastic Tile/Shake/Slate Systems	Uplift Performance	TAS 125
Plastic Tile/Shake/Slate	Outdoor Exposure Xenon Arc	G26 (6500 watts) Test Method I or G155 (4500 hours)
	Tensile Test	D638 (+/- 10% allowable difference between exposed and non-exposed samples)
	Flexural Test	C158 (+/- 10% allowable difference between exposed and non-exposed samples)
Plastic Tile/Shake/Slate	Self Ignition	D1929 (greater than 650°F)
Plastic Tile/Shake/Slate	Smoke Density Rating	E84 (rating less than 450) or D2843 (rating less than 75)
Plastic Tile/Shake/Slate	Rate of Burning	D635 (Class CC-1 or CC-2)
<b>Underlayment</b>		
Self-Adhered Underlayments	Physical Properties	TAS 103 or ASTM D1970
Nail-On Underlayments	Physical Properties	TAS 104
Asphalt Based Underlayments	Physical Properties	See Section 2 of this Protocol
<u>Synthetic Underlayments</u>	<u>Physical Properties</u>	<u>ASTM D8257</u>
<b>Attachment Components</b>		
Nails, Screws, Clips, etc.	Corrosion Resistance	Appendix E of TAS 114

**18. Referenced Standards****ASTM**

ASTM International  
100 Barr Harbor Drive, P.O. Box C700  
West Conshohocken, PA 19428-2959

Standard reference number	Title
<u>D8257</u>	<u>Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing</u>

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

R10273

92

Date Submitted	02/12/2022	Section	15	Proponent	Gaspar Rodriguez
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

General Comments No

Alternate Language No

### Related Modifications

### Summary of Modification

On Table 15, replace FM 4471 with TAS 114, as an alternate test standard.

### Rationale

Replace discontinued FM 4471 standard with equivalent TAS 114 standard.

### Fiscal Impact Statement

**Impact to local entity relative to enforcement of code**

None.

**Impact to building and property owners relative to cost of compliance with code**

None.

**Impact to industry relative to the cost of compliance with code**

Allows manufacturers to continue to use recently performed testing.

**Impact to small business relative to the cost of compliance with code**

### Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Maintains current code.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Maintains current code.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate.

**Does not degrade the effectiveness of the code**

Maintains current code.

TABLE 15

TABLE 15

Product	Test	Test Standard
Structural, Nonstructural Metal Panels and Metal Shingle Roof Assemblies	Uplift Resistance	TAS 125
Structural, Nonstructural Metal Panels and Metal Shingle Roof Assemblies	Wind and Wind Driven Rain Resistance	TAS 100
Structural, Nonstructural Metal Panels and Metal Shingle Roof Assemblies	Fire Resistance	E108 (min. Class "B")
Structural, Nonstructural Metal Panels and Metal Shingle Roof Assemblies	Accelerated Weathering	G152 or G155 (2000 hours)
Structural, Nonstructural Metal Panels and Metal Shingle Roof Assemblies	Salt Spray	B117 (1000 hours)
Insulated Metal Panels	Thermal Value	C518 (report)
Nonstructural  Standing Seam Metal Panels	Static Water Leakage Test <sup>1</sup>	<del>FM 4471</del> <del>TAS 114</del> Appendix G or ASTM E2140-01 <sup>2</sup>

1. Optional test to allow minimum slope of 1:12.

2. Standing seam metal roof panel systems that pass the requirements of ~~FM 4471~~ TAS 114, Appendix G or ASTM E2140-01, shall be permitted to be installed to a minimum slope of 1:12.

# TAC: Roofing

Total Mods for **Roofing** in **Pending Review** : 93

Total Mods for report: 93

## Sub Code: Test Protocols

**R9922**

93

Date Submitted	01/18/2022	Section	6	Proponent	Aaron Phillips
Chapter	1	Affects HVHZ	Yes	Attachments	No
TAC Recommendation	Pending Review				
Commission Action	Pending Review				

### Comments

**General Comments No**

**Alternate Language No**

### Related Modifications

### Summary of Modification

Uplift tests clarifications.

### Rationale

This MOD offers several clarifications to TAS 124. Section 4.3 is changed to clarify that it provides guidance for dealing with roof replacements, not for new construction. The new subsection added to Section 6.2 clarifies the limitations associated with the Bell Chamber test, in accordance with the Section 6 title—Test Limitations and Precautions. Systems that are Approved by tests per TAS 114 Appendix D should be tested via the bonded pull test, which uses a 2' x 2' sample side (i.e., total of 4 square feet). The Bell Chamber test uses a 25 square foot sample size. There is no correlation in performance between the bonded pull test of TAS 114 Appendix D and the pressure chamber tests of TAS 114 Appendices C and J. The additional information added to Section 6.3.1 clarifies the limitations associated with the bonded pull test, in accordance with the Section 6 title. Specifically, it clarifies that the bonded pull test is used when all components of the roofing system are fully or partially bonded, not when only the roof covering is bonded. The roof covering may be fully adhered, but if the underlying insulation or base sheets are mechanically attached the Bell Chamber test should be used rather than the bonded pull test. Finally, deflection is neither measured nor a condition of failure in TAS 114 Appendices C and J. The addition to Section 10.1.2 and the associated new Table 3 establish specific deflection limits when conducting the Bell Chamber test. These limits are consistent with those of FM Global Property Loss Prevention Data Sheet 1-52, from which TAS 124 was derived.

### Fiscal Impact Statement

#### Impact to local entity relative to enforcement of code

Improves understanding of uplift test provisions, which should positively affect local enforcement of code.

#### Impact to building and property owners relative to cost of compliance with code

No cost of compliance impact is expected because the changes are simply to clarify requirements.

#### Impact to industry relative to the cost of compliance with code

No cost of compliance impact is expected because the changes are simply to clarify requirements.

#### Impact to small business relative to the cost of compliance with code

## Requirements

**Has a reasonable and substantial connection with the health, safety, and welfare of the general public**

Improves understanding and applicability of uplift tests.

**Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction**

Improves understanding and applicability of uplift tests.

**Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities**

Does not discriminate. Clarifies applicability of tests.

**Does not degrade the effectiveness of the code**

Improves effectiveness of the code by providing better guidance for uplift tests applicability.

**Revise TAS 124 as shown below:**

**Revise 4.3 to clarify it does not address new construction.**

4.3 When ~~new construction will require~~ a tear off of the existing roof system assembly is required, areas of existing roofing shall be removed to deck level. Sample assemblies shall be applied including a lifting panel, as detailed in Section 5.2 when the bonded pull test procedure is utilized. Sample panels shall be covered and waterproofed with a membrane roof covering to return the existing assembly to a waterproof condition.

**Add new subsection within section 6.2 (Bell chamber tests) to clarify when the bell chamber protocol is to be used. Renumber subsequent sections.**

6.2.1 The Bell chamber test is appropriate when the selected roofing system has been tested in accordance with TAS 114 Appendix C or Appendix J. The Bell Chamber test is not appropriate for systems tested in accordance with TAS 114 Appendix D.

6.2.12

6.2.23

6.2.34

6.2.45

**Clarify the limitations for use of the bonded pull test.**

6.3.1 Testing shall only be conducted on fully adhered roof coverings and when all other roofing system components are adhered and or partially adhered. This test is not appropriate when any of the roofing system components are mechanically attached.

**Provide additional guidance for deflection limits for the Bell Chamber test.**

10.1.2 Any roof system assembly which exhibits an upward deflection greater than ~~or equal to~~ 1 inch (25 mm) during any of the tests shall be considered as failing at the point where 1 inch (25 mm) of deflection is recorded. Refer to Table 3 for deflection limitations.

**Insert new Table 3.**

Table 3 Maximum Recommended Deflection for Adhered Covers on Steel Deck Roofs Before the Sample is Considered Suspect

<u>Test Pressure</u>	<u>Maximum Deflection</u>
<u>60 &lt; P &lt; 120</u>	<u>½ or 0.50</u>
<u>120 &lt; P &lt; 180</u>	<u>¾ or 0.75</u>
<u>180 &lt; P &lt; 225</u>	<u>15/16 or 0.94</u>

Note: For roof assemblies in which thin topping boards or the roof cover are adhered to a substrate immediately below using ribbons of adhesive, use a maximum deflection of 1 in. (25 mm) to determine suspect test samples.