Roofing

Proposed Code Modifications

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TAC: Roofing

Sub Code: Building

Total Mods for Roofing: 15

R3814

Date Submitted	3/31/2010	**Section**	1507.15	**Proponent**	Pate Lisa
Chapter	15	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation Approved as Modified
Commission Action Pending Review

Related Modifications

Summary of Modification

Liquid-applied roof coatings.

Rationale

To eliminate premature degradation of shingles.

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.

Requirements

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

No connection.

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

Strengthens and improves code; adds clarification.

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.

1507.15 Liquid-applied coatings.

The installation of liquid-applied coatings shall comply with the provisions of this section.

1507.15.3 Roof Coating. Application of elastomeric and or maintenance coating systems over existing asphalt shingles shall be in accordance with the shingle manufacturer's approved installation instructions.

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Alternate Language

2nd Comment Period 09/03/2010 - 10/18/2010

R3814-A4

Proponent Garth Parker **Submitted** 10/11/2010 **Attachments** Yes

Rationale

-Premature degradation of asphalt shingles by elastomeric coatings is not a proven, scientific fact. -Waterborne elastomeric compounds (acrylic resins & titanium oxide) have no more impact than rainwater on asphalt shingles. -FBC/M-D accredited laboratory states elastomeric coatings are approved for asphalt shingle application.

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

Requirements

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

-Extended asphalt shingle life cycle reduces landfill dumping capacity. -Proven energy savings & global warming mitigation. -Reduces urban heat island effect & supports green building concept. -Supports FPL/DOE policy to reduce carbon footprint & energy consumption.

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

Provides a lower cost, alternative method for asphalt shingle roof maintenance.

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

Modification R3814-R1 discriminates against elastomeric coating manufacturers; this change removes this discrimination.

Does not degrade the effectiveness of the code

The change does not degrade the effectiveness of the code.

1507.15 Liquid-applied coatings.

The installation of liquid-applied coatings shall comply with the provisions of this section.

1507.15.3 Roof coating. No liquid-applied roof coating shall be applied over existing asphalt shingles.

Application of elastomeric and or maintenance coating systems over existing asphalt shingles shall be in accordance with the shingle or elastomeric coating manufacturer's approved installation instructions.

R3799

Date Submitted	3/24/2010	**Section**	1521.17.1	**Proponent**	Mark Zehnal
Chapter	15	**Affects HVHZ**	Yes	**Attachments**	Yes

TAC Recommendation Approved as Modified
Commission Action Pending Review

Related Modifications

Summary of Modification

This modification adds a specific code reference relevant to the asphalt shingle section.

Rationale

This modification adds a specific code reference to place an existing HVHZ requirement in the correct code section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Clarification. This modification adds a specific code reference to place an existing HVHZ requirement in the correct code section.

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

Requirements

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

Clarification. This modification adds a specific code reference to place an existing HVHZ requirement in the correct code section.

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

Clarification. This modification adds a specific code reference to place an existing HVHZ requirement in the correct code section.

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

Does not discriminate. This modification adds a specific code reference to place an existing HVHZ requirement in the correct code section.

Does not degrade the effectiveness of the code

Does not degrade

1521.17.1 Application of elastomeric and or maintenance coating systems over existing asphalt shingles shall be in accordance with the shingle manufacturer's approved installation instructions.

~~**1521.17.1** No elastomeric and or maintenance coating systems shall be applied over existing asphalt shingles unless specifically approved by the shingle manufacturer.~~

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Alternate Language

2nd Comment Period 09/03/2010 - 10/18/2010

R3799-A3

Proponent Garth Parker **Submitted** 10/11/2010 **Attachments** Yes

Rationale

-Shingle manufacturers now offer elastomeric coating for factory or field application. -FBD/MD accredited test entity stated elastomeric approved for asphalt shingle application. -Property owner deprived of energy savings/extended roof life benefit of elastomeric coating. -Modification R3799-R1 is restrictive against elastomeric manufacturers.

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

Requirements

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

-Extended asphalt shingle life cycle reduces landfill dumping. -Proven energy savings and global warming mitigation -Reduces urban heat island effect & supports green building initiative. -Supports FPL and DOE policy/program to reduce carbon footprint & energy consumption

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

-Provides lower, coat alternative method for roof maintenance.

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

Modification R3799-R1 discriminates against elastomeric coating manfuacturers; this modification removes this discrimination.

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code.

1521.17.1 No elastomeric and or maintenance coating systems shall be applied over existing asphalt shingles unless specifically approved by the shingle manufacturer.

Application of elastomeric and or maintenance coating systems over existing asphalt shingles shall be in accordance with the shingle or elastomeric coating manufacturer's approved installation instructions.

Sub Code: Residential

R3800

Date Submitted	3/24/2010	**Section**	R4402.10.17.1	**Proponent**	Mark Zehnal
Chapter	44	**Affects HVHZ**	Yes	**Attachments**	Yes

TAC Recommendation Approved as Modified
Commission Action Pending Review

Related Modifications

Summary of Modification

This modification adds a specific code reference relevant to the asphalt shingle section.

Rationale

This modification adds a specific code reference to place an existing HVHZ requirement in the correct code section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Clarification. This modification adds a specific code reference to place an existing HVHZ requirement in the correct code section.

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

Requirements

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

Clarification. This modification adds a specific code reference to place an existing HVHZ requirement in the correct code section.

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

Clarification. This modification adds a specific code reference to place an existing HVHZ requirement in the correct code section.

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

Does not discriminate. This modification adds a specific code reference to place an existing HVHZ requirement in the correct code section.

Does not degrade the effectiveness of the code

Does not degrade

~~**R4402.10.17.1**No elastomeric and or maintenance coating systems shall be applied over existing asphalt shingles unless specifically approved by the shingle manufacturer.~~

R4402.10.17.1 Application of elastomeric and or maintenance coating systems over existing asphalt shingles shall be in accordance with the shingle manufacturer's approved installation instructions.

Alternate Language

2nd Comment Period 09/03/2010 - 10/18/2010

R3800-A6

Proponent Garth Parker **Submitted** 10/11/2010 **Attachments** Yes

Rationale

-Asphalt shingle manufacturers now offer factory or field applied elastomeric coatings. -FBC/M-D accredited test entity stated elastomeric approved for asphalt shingle application. -Property owner deprived of energy savings/extended roof life benefits of elastomeric coating. -Modification R3800-R1 is restrictive against elastomeric coating manufacturers.

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

Requirements

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

-Extended asphalt shingle life cycle reduces landfill dumping requirements. -Proven energy savings and global warming mitigation. -Reduces urban heat island effect/supports green building concept. -Supports FPL/DOE program to reduce carbon/energy needs.

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

Provides lower cost, alternative method for roof maintenance.

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

Modification R-3800-R1 discriminates against elastomeric coating manufacturers; this change removes this discrimination

Does not degrade the effectiveness of the code

This change does not degrade the effectiveness of the code.

Alternate Language

2nd Comment Period 09/03/2010 - 10/18/2010

R3800-A5

Proponent Garth Parker **Submitted** 10/11/2010 **Attachments** Yes

Rationale

-Asphalt shingle manufactuers now offering factory or field applied elastomeric coatings. -FBC/M-D accredited test entity stated elastomeric approved for asphalt shingle application. -Property owner deprived of energy savings/extended roof life benefits of elastomeric coating. -Modification R3800-R1 is restrictive against elastomeric coating manufacturers.

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

Requirements

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

-Extended asphalt shingle life cycle reduces landfill dumping requirements. -Proven energy savings and global warming mitigation. -Reduces urban heat island effect & supports green building initiative. -Supports FPL & DOE program to reduce carbon footprint/energy consumption.

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

-Provides lower cost, alternative method for roof maintenance.

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

Modification R3800-R1 discriminates against elastomeric coating manufacturers; this change removes this discrimination.

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code.

R4402.10.17.1 No elastomeric and or maintenance coating systems shall be applied over existing asphalt shingles unless specifically approved by the shingle manufacturer.

Application of elastomeric and or maintenance coating systems over existing asphalt shingles shall be in accordance with the shingle or elastomeric coating manufacturer's approved installation instructions.

Application of elastomeric and or maintenance coating systems over existing asphalt shingles shall be in accordance with the shingle or elastomeric coating manufacturer's approved installation instructions.

Sub Code: Test Protocols

R4437

Date Submitted	4/2/2010	**Section**	3.2.1	**Proponent**	Katherine Cleary
Chapter	1	**Affects HVHZ**	Yes	**Attachments**	Yes

TAC Recommendation Approved as Modified
Commission Action Pending Review

Related Modifications

Summary of Modification

Core Cut into lightweight Cocrecte and lightweight insulating concrete should have a acceptable moisture by weight content. High moisture in LWC can have a long term affect on deck.

Rationale

A allowable moisture by weight content should be set for lightweight insulating concrete and lightweight concrete deck. Roof Systems that do not have an insulation board moisture is absorbed into the lightweight insulating concrete. Long term effect on steel deck with high amount of moisture in lightweight insulating concrete.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Help property owners to determine when lightweight insulating concrete should be removed

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

Able to help get creditable estimates from contractors.

Impact to industry relative to the cost of compliance with code

The cost is a small testing fee in comparison to long term effect of lightweigt insulating concrete over a roof deck (ie. corrosion on steel deck)

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

Testing lightweight insulating concrete will have educate the property owners. Set a standard for contractors to follow.

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

No

Does not degrade the effectiveness of the code

No

TAS 126-95, 3.2.1 Core Cut - a sample of the roof system extracted from and existing roof system for futher analysis, including all elements of the roofing system and deck materials capable of moisture absorption,excluding lightweight and structural concrete, ~~lightweight insulating concrete,~~ gypsum, and cementious wood fiber wood roof decks.

Alternate Language

2nd Comment Period 09/03/2010 - 10/18/2010

R4437-A10

Proponent Katherine Cleary **Submitted** 10/18/2010 **Attachments** Yes

Rationale

Excessive moisture in LWIC affects the insulation performance of the LWIC Excessive moisture in LWIC (if trapped with no relief) will cause roof system to blister Excessive moisture in LWIC over steel decks, will accelerate corrosion of steel deck

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Minimal impact. Causes contractor to get three additional cores (Costs about $150.00) to verify moisture content. If found to be wetter than permitted, then contractor must wait (allow LWIC) for it to dry to within acceptable limits, before re-roofing.

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

Minimal impact. Costs about $150.00 for three additional cores to verify moisture content. Results in a much better performing roof system with a drier LWIC.

Impact to industry relative to the cost of compliance with code

Minimal impact. The total costs are about $150.00 and a couple of days delay in re-roofing (to allow LWIC to dry up). Results in a much better performing roof system with a drier LWIC.

Requirements

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

Public gets better performing roof system

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

Unlike Gypsum, LWIC claims to have insulation properties. Hence this code change affect LWIC

Does not degrade the effectiveness of the code

Absolutely not. In fact it strengthens the Code.

Alternate Language

1st Comment Period History 04/15/2010 - 06/01/2010

R4437-A6

Proponent Katherine Cleary **Submitted** 5/27/2010 **Attachments** Yes

Rationale

Language Correction - Lighweight Insulating Concrete should be excluded from the exclusion. Lightweight Insulating concrete is capable of moisture absorption and therfore should have an allowable amount of moisture by weight content.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact Building Official are familiar with the Roof Moisture Survey, just adding a seperate allowable moisture by weight content will be set for lightweight insulating concrete.

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

This will be good for property owners there will be a code that a roofing contractor can refer to when the contractor can say the current lightweight is able to be consider for roof repair or roof replace. Second will show a property owners areas of moisture absorption in LWC.

Impact to industry relative to the cost of compliance with code

This has been a cost in the pass.

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

Strengthens and improves code.

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

No

Does not degrade the effectiveness of the code

No

2nd Comment Period 09/03/2010 - 10/18/2010

R4437-G1

Proponent John Rose **Submitted** 9/29/2010 **Attachments** Yes

Comment:

See attached comments.

2nd Comment Period 09/03/2010 - 10/18/2010

R4437-G2

Proponent William Mac Donald **Submitted** 9/29/2010 **Attachments** Yes

Comment:

Please find attached, my objection to the change being proposed to TAS 126, Section 3.2.1, via R4437 R1 and the suggested modification to FBC Section 1917 via R4437.

Thank you.

2nd Comment Period 09/03/2010 - 10/18/2010

R4437-G3

Proponent John Sedenquist **Submitted** 10/4/2010 **Attachments** Yes

Comment:

See attached File

2nd Comment Period 09/03/2010 - 10/18/2010

R4437-G4

Proponent John Sedenquist **Submitted** 10/4/2010 **Attachments** Yes

Comment:

See attached documentation

2nd Comment Period 09/03/2010 - 10/18/2010

R4437-G5

Proponent Leo Legatski **Submitted** 10/4/2010 **Attachments** Yes

Comment:

Please see my comments regarding the proposed Code Modifications.

2nd Comment Period 09/03/2010 - 10/18/2010

R4437-G6

Proponent James Engskow **Submitted** 10/13/2010 **Attachments** Yes

Comment:

Please see attached file.

2nd Comment Period 09/03/2010 - 10/18/2010

R4437-G7

Proponent Deborah Lawson **Submitted** 10/18/2010 **Attachments** Yes

Comment:

The Florida Roof Deck Association opposes this proposed code amendment.
See attached comments.

R4437-G8

Proponent Katherine Cleary **Submitted** 10/18/2010 **Attachments** No

Comment:

1521.12 Moisture content of the existing roof assembly to be covered by a new roofing system shall not exceed 5 percent by weight in the roofing membrane, 8 percent by weight in commercially manufactured rigid board roof insulation and 25% by weight in lightweight insulating concrete as verified by the moisture survey performed in accordance with TAS-126. Test results shall be submitted with the Uniform Roofing Permit Application. Testing for moisture content shall not be required for gypsum and cementitious wood fiber roof decks. All existing lightweight insulating concrete, gypsum and cementitious wood fiber roof decks shall be tested per Section 1521.7 to confirm compliance with the wind load requirements of Chapter 16 (High-Velocity Hurricane Zones).

TAS 126-95, 3.2.1 Core Cut - a sample of the roof system extracted from and existing roof system for futher analysis, including all elements of the roofing system and deck materials capable of moisture absorption, excluding lightweight and structural concrete, lightweight insulating concrete, gypsum, and cementious wood fiber wood roof decks.

TAS 126-95, 3.2.1 Core Cut - a sample of the roof system extracted from and existing roof system for futher analysis, including all elements of the roofing system and deck materials capable of moisture absorption,excluding lightweight and structural concrete, ~~lightweight insulating concrete~~, gypsum, and cementious wood fiber wood roof decks.

TAS 126-95, 3.2.1 Core Cut - a sample of the roof system extracted from and existing roof system for futher analysis, including all elements of the roofing system and deck materials capable of moisture absorption,excluding lightweight and structural concrete, ~~lightweight insulating concrete,~~ gypsum, and cementious wood fiber wood roof decks.

1521.12 Moisture content of the existing roof assembly to be covered by a new roofing system shall not exceed 5 percent by weight in the roofing membrane, 8 percent by weight in commercially manufactured rigid board roof insulation and 25% by weight in lightweight insulating concrete as verified by the moisture survey performed in accordance with TAS-126. Test results shall be submitted with the Uniform Roofing Permit Application. Testing for moisture content shall not be required for gypsum and cementitious wood fiber roof decks. All existing lightweight insulating concrete, gypsum and cementitious wood fiber roof decks shall be tested per Section 1521.7 to confirm compliance with the wind load requirements of Chapter 16 (High-Velocity Hurricane Zones).

Comments to Modification R4437

Proposed modification to TAS 126-95, 3.2.1

Summary of Modification:

Proposal: "Core Cut into lightweight Cocrecte and lightweight insulating concrete should have a acceptable moisture by weight content. High moisture in LWC can have a long term affect on deck."

Comment: The proposal statement is misleading. LWC is a term used for concrete systems with a dry density of 100 pcf or greater. These are commonly referred to as lightweight structure concrete and normal weight structural concrete. The American Concrete Institute document ACI 523.1R-06 references lightweight insulating concrete as a material with a dry density of 50 pcf or less. These LWIC materials are commonly used as a substrate to a roofing membrane in a roof assembly. The TAS 126-95, 3.2.1 Core Cut proposed change addresses lightweight insulating concrete or commonly know as LWIC and not LWC.

Rationale:

Proposal: "A allowable moisture by weight content should be set for lightweight insulating concrete and lightweight concrete deck. Roof Systems that do not have an insulation board moisture is absorbed into the lightweight insulating concrete. Long term effect on steel deck with high amount of moisture in lightweight insulating concrete."

Comment: Section 1917.4.4 of the code states, "Galvanized coatings of formed steel sheets shall be in accordance with ASTM A 525 with a minimum coating designation of G-90. Base steel shall conform to ASTM A 446, grade A, B, C, D or greater and ASTM A 611 C, D or E." This high degree of galvanized addresses moisture effects to the metal deck.

Section 1917.4.1 of the code states, " Lightweight insulating concrete fill shall be poured over bottom slotted galvanized (G-90) steel decking as follows; cellular, 0.5 percent open; hybrid, 0.75 percent open, aggregate 1.5 percent open." This venting requirement addresses moisture intrusion from a roof leak or other source to allow the roof assembly to vent the moisture out.

Fiscal Impact Statement:

Impact to local entity relative to enforcement of code.

Proposal: "Help property owners to determine when lightweight insulating concrete should be removed".

Comment: Residual moisture content is not the determining factor in the sustainability of an LWIC system. That is a factor of two physical properties, density(pcf) and compressive strength (psi). These two criteria are sighted in both the Florida product approvals and Dade NOA product listings. ASTM C-513 is currently used to test LWIC systems physical properties.

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

Proposal: "Able to help get creditable estimates from contractors."

Comments: Would add additional procedures/cost with no benefit to current code requirements sited in section 1917.4.1 and 1917.4.4 of the code.

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

Proposal: "The cost is a small testing fee in comparison to long term effect of lightweigt insulating concrete over a roof deck (ie. corrosion on steel deck)"

Comment: Subjective statement. Steel deck implies non-galvanized. As stated previously, LWIC systems per Section 1917.4.4 of the code are placed on galvanized, minimum G-90 roof deck.

Requirements:

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

Proposal: "Yes"

Comments: Arbitrary and undocumented.

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

Proposal: "Testing lightweight insulating concrete will have educate the property owners. Set a standard for contractors to follow."

Comments: Current standards already exist, ASTM C 513, ANSI SPRI FX-1 2006 and TAS 114 procedues follow by owners and contractors for many years.

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

Proposal: "No"

Comment: Yes

Does not degrade the effectiveness of the code.

Proposal: "No"

Comment: Yes

Alternate Language Submitted 5/27/2010

Language Correction –

Proposal: Lighweight Insulating Concrete should be excluded from the exclusion. Lightweight Insulating concrete is capable of moisture absorption and therfore should have an allowable amount of moisture by weight content.

Comment: The code is consistent as written, no change is needed.

Fiscal Impact Statement:

Impact to local entity relative to enforcement of code.

Proposal: "No impact Building Official are familiar with the Roof Moisture Survey, just adding a seperate allowable moisture by weight content will be set for lightweight insulating concrete."

Comment: Impact unknown, possibly negative.

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

Proposal: "This will be good for property owners there will be a code that a roofing contractor can refer to when the contractor can say the current lightweight is able to be consider for roof repair or roof replace. Second will show a property owners areas of moisture absorption in LWC."

Comment: Current Building Code section 1917.3 already defines testing for this type of product. This is basis and reason that the current TAS 126-95, 3.2.1 document excludes lightweight insulating concrete (LWIC).

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

Proposal: "This has been a cost in the pass."

Comment: Would increase cost.

Requirements

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

Proposal: "Yes"

Comment: No

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

Proposal: "Strengthens and improves code."

Comment: The current standards address the physical properties of LWIC systems that are currently sighted in the Florida Building Code, Florida Product Approvals and Dade NOA approvals. TAS 126-95, 3.2.1 document is consistent with Building Code section 1917.3 defining testing of the product.

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

Proposal: "No"

Comment: Yes

Does not degrade the effectiveness of the code

Proposal: "No"

Comment: Yes

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Comments to Proposed FBC Modification R4437 Dated 04.20.10 and Proposed Revision Language R4437 R1 for TAS 126-95, Section 3.2.1 Dated 08.19.10

Summary of Modification:

Proponent: Core Cut into lightweight Cocrecte (concrete) and lightweight insulating concrete should have a acceptable moisture by weight content. High moisture in LWC can have a long term affect on deck.

Comment: Lightweight Concrete (LWC) is a term used to describe a lower density version of normal weight concrete and is not typically used in roof deck construction. Lightweight insulating concrete (LWIC) is the proper term for the low-density cementitious fills used to construct insulating systems designed to receive roofing. ACI 523.1R-1and FBC Section 1917.1 defines LWIC as having an oven dry density of 50 lbs/ft^3 or less.

Rational:

Proponent: A allowable moisture by weight content should be set for lightweight insulating concrete and lightweight concrete deck. Roof Systems that do not have an insulation board moisture is absorbed into the lightweight insulating concrete (LWIC). Long term effect on steel deck with high amount of moisture in lightweight insulating concrete.

Comment: Decking used in conjunction with lightweight insulating concrete (LWIC) systems are required by code, FBC Section 1917.4.1 and 1917.4.4, to be G-90 galvanized. Moisture that may be found in lightweight insulating concrete acquires a base[1] characteristic. The galvanizing on steel deck panels contemplated for use in conjunction with lightweight insulating concrete placements, are by design, compatible with the alkaline property of the cementitious fill and any associated moisture. Due to its base[1] characteristic, moisture that may be contained in LWIC does not support red rust corrosion. Accordingly, steel deck deterioration does not occur. The Proponents rational is subjective.

1. Chemical definition, alkaline having a pH greater than 7.

Fiscal Impact Statement:

Impact to local entity relative to enforcement of code:

Proponent: Help property owners to determine when lightweight insulating concrete should be removed.

Comment: Moisture content should not be used as a primary factor in determining when an in-situ insulating concrete deck shall be remove. Other physical properties, such as compressive strength, and when applicable, fastener withdrawal resistance are primary indicators for determining deck adequacy. FBC Section 1917.4.3 currently references a summary of compressive strength(s) for LWIC and FBC Section 1917.4.10 currently references fastener withdrawal resistance values. Standards ASTM C-513 and TAS 105 or ANSI SPRI FX-1 2006 apply respectively.

Comments to Modification R4437

Proposed Modification to TAS 126-95, 3.2.1

Summary of Modification

Proponent: Core Cut into lightweight concrete and lightweight insulating concrete should have a acceptable moisture by weight content. High moisture in LWC can have a long term affect on deck.

Comment: Lightweight concrete and lightweight insulating concrete are two different materials and serve two different applications as defined by the Florida Building Code, the American Concrete Institute, the National Roof Deck Association, the Florida Roof Deck Association, the Roofing Consultants Institute, the National Roofing Contractors Association, the Portland Cement Association and Factory Mutual.

Lightweight concrete (LWC) is used as a structural part of the building having a density of approximately 115 to 130 pounds per cubic foot. Its use is structural it is not used for its insulating value. A roof system is attached to the LWC the LWC is not part of the roofing system but the structural design of the structure, in many cases there is steel reinforcement in LWC. The permeability of LWC is very low and when placed over a metal deck the galvanized metal deck and the PH of the cement prevent the creation of "red rust".

Lightweight insulating concrete (LWIC) has a density no greater than 50 pcf as defined in the Florida Building Code Section 1917.1 and the American Concrete Institute in section ACI 523. 1R-1. Factory Mutual defines LWIC as insulation. Factory Mutual and Miami Dade does not test wind uplift of LWC only roof systems attached to the LWC. LWIC also has a PH that works successfully with the existing Florida Building Code which specifies G-90 galvanized metal deck. The permeability of LWIC is very low and when placed over the galvanized metal deck the PH of the cement prevent the creation of "red rust". When LWIC concrete is placed directly to the metal deck Florida Building Code requires that the deck is a vented deck which creates air flow which keeps the deck dry. The use of galvanized vented metal deck is in the Florida Building Code to address the concerns of the proponent.

The proponent's definitions and definition of use do not conform to the industry, codes and are not consistent with standard building practices. The moisture in either system does not degrade the concrete or the galvanized decking that is currently specified by the Florida Building Code.

Rational

Proponent: Language Correction - Lightweight Insulating Concrete should be excluded from the exclusion. Lightweight Insulating concrete is capable of moisture absorption and therefore should have an allowable amount of moisture by weight content.

Comment: FBC Section 1917.4.1 and 1917.4.4 requires the use of G-90 galvanized decking be used in conjunction with lightweight insulating concrete (LWIC) systems. The galvanized vented steel deck panels used with lightweight insulating concrete are designed to react favorably with the alkaline of Portland cement. This combination through testing and empirical data has demonstrated that the grouping of LWIC and vented galvanized deck does not create corrosion of the metal deck.

Comments to Modification R4437

Proposed Modification to TAS 126-95, 3.2.1

Summary of Modification

Proponent: Core Cut into lightweight concrete and lightweight insulating concrete should have a acceptable moisture by weight content. High moisture in LWC can have a long term affect on deck.

Comment: Lightweight concrete and lightweight insulating concrete are two different materials and serve two different applications as defined by the Florida Building Code, the American Concrete Institute, the National Roof Deck Association, the Florida Roof Deck Association, the Roofing Consultants Institute, the National Roofing Contractors Association, the Portland Cement Association and Factory Mutual.

Lightweight concrete (LWC) is used as a structural part of the building having a density of approximately 115 to 130 pounds per cubic foot. Its use is structural it is not used for its insulating value. A roof system is attached to the LWC the LWC is not part of the roofing system but the structural design of the structure, in many cases there is steel reinforcement in LWC. The permeability of LWC is very low and when placed over a metal deck the galvanized metal deck and the PH of the cement prevent the creation of "red rust".

Lightweight insulating concrete (LWIC) has a density no greater than 50 pcf as defined in the Florida Building Code Section 1917.1 and the American Concrete Institute in section ACI 523. 1R-1. Factory Mutual defines LWIC as insulation. Factory Mutual and Miami Dade does not test wind uplift of LWC only roof systems attached to the LWC. LWIC also has a PH that works successfully with the existing Florida Building Code which specifies G-90 galvanized metal deck. The permeability of LWIC is very low and when placed over the galvanized metal deck the PH of the cement prevent the creation of "red rust". When LWIC concrete is placed directly to the metal deck Florida Building Code requires that the deck is a vented deck which creates air flow which keeps the deck dry. The use of galvanized vented metal deck is in the Florida Building Code to address the concerns of the proponent.

The proponent's definitions and definition of use do not conform to the industry, codes and are not consistent with standard building practices. The moisture in either system does not degrade the concrete or the galvanized decking that is currently specified by the Florida Building Code.

Rational

Proponent: Language Correction - Lightweight Insulating Concrete should be excluded from the exclusion. Lightweight Insulating concrete is capable of moisture absorption and therefore should have an allowable amount of moisture by weight content.

Comment: FBC Section 1917.4.1 and 1917.4.4 requires the use of G-90 galvanized decking be used in conjunction with lightweight insulating concrete (LWIC) systems. The galvanized vented steel deck panels used with lightweight insulating concrete are designed to react favorably with the alkaline of Portland cement. This combination through testing and empirical data has demonstrated that the grouping of LWIC and vented galvanized deck does not create corrosion of the metal deck.

Comments to Modification R4437

Proposed modification to TAS 126-95, 3.2.1

Summary of Modification:

Proposal: "Core Cut into lightweight ~~Cocrete~~ (Concrete) and lightweight insulating concrete (LWIC) should have a acceptable moisture by weight content. High moisture in LWC (LWIC ?) ~~can~~ (may) have a long term affect on deck."

Comment: Because the proposal statement is inaccurate, I've corrected it as I believe the author may have intended. LWIC or cellular concrete is defined in ACI 523.1R-06 as a concrete with an oven dry density of 50 pcf or less. I'm not sure if the author is clear about the differences between lightweight concrete (LWC) and lightweight insulating concrete (LWIC) used in roof deck applications.

Rationale:

Proposal: "A allowable moisture by weight content should be set for lightweight insulating concrete (LWIC) and lightweight concrete deck (LWC ?). Roof Systems that do not have an insulation board moisture is absorbed into the lightweight insulating concrete. Long term effect on steel deck with high amount of moisture in lightweight insulating concrete."

Comment: This proposal statement is totally confusing and unclear. In the first sentence, why is the phrase "…and lightweight concrete deck." Included ? The second sentence does not make sense and I've been involved in this industry for 40 years. The third sentence is not a complete sentence. Does the author understand what she is trying to say ?

Therefore, my dilemma becomes do I respond to a series of unclear sentences that make no sense, do I assume what I think the author means, or do I clarify generalizations about our industry as it applies to the FBC ?

Because there are significant different in physical characteristics of the various roof deck materials, an approved sampling method should be detailed only when samples are required. An industry accepted sampling method per NRDCA, ASTM, or ACI (when applicable) should be followed to secure samples from an existing roof deck. For example, for lightweight insulating concrete (LWIC) roof decks, use ASTM C513.

To determine the actual moisture content, the sample should be weighed in the "as received" condition and dried in an oven until the weight is constant. From this, the actual moisture percentage may be calculated. Moisture meters are not an acceptable method for determining moisture percentage.

Since moisture percentages will vary considerably for the different types of lightweight insulating concrete (cellular vs. expanded aggregate concrete), the insulating concrete manufacturer and the roofing membrane manufacturer should determine if it is proper to apply the new roofing membrane as they are responsible for its performance.

In addition, lightweight insulating concrete roof decks are rarely only partially removed in a re-roofing application. These would be instances in which they are too soft to attain a minimum 40 pound fastener withdrawal. Then, the material is removed down to a solid substrate. Then, an acceptable patching material is applied to these local areas prior to installing the roofing membrane.

Early 2007 I introduced the code change during the last cycle which removed light weight insulating concrete from the list of materials which are required to be tested for moisture. At that time the modification was heartily supported by representatives of Miami Dade County.

Moisture does not degrade light weight insulating concrete. The strength of LWIC is increased by the process of "wet-curing".

Moisture testing of existing light weight insulating concrete does not assure that it is in suitable condition for reroofing. Dry light weight insulating concrete can be unsuitable for reroofing.

It is my opinion that, sometimes during the reroofing process, roofers and consultants encounter degraded LWIC that is also moist and incorrectly assume that moisture is the cause of the degradation. The assumption is incorrect. Dry LWIC can be unsuitable for reroofing. Moisture laden LWIC may be suitable for reroofing.

Dry LWIC over steel decking does not assure that the steel decking is not corroded.

Moisture laden existing LWIC can dry if the source of water intrusion is eliminated.

Moisture testing of LWIC is insufficient for determining the suitability of LWIC for roofing. Moisture test results reveal nothing of the soundness of the LWIC. Moisture testing is insufficient for determining the condition of compromised steel decking.

The fastener pull-out test as currently required by code demonstrates the uplift resistance which will be achieved at reroofing, whether wet or dry. The fastener pull-out test results speak to the dimensionally stability of LWIC. The fastener pull test as required by code is sufficient, practical and appropriate for assuring that the LWIC is in suitable condition for reroofing.

The proposed modification to code would be ineffective and would require excessive testing.

RATIONALE – Response of the FRDA

The members of the Florida Roof Deck Association (FRDA) have voted to unanimously oppose proposed code modification R4437. In addition to these comments made on behalf of the FRDA, the manufacturer-members of FRDA (Celcore, Inc., Elastizell Corporation of America, Cellular Concrete LLC, and Siplast) have submitted their individual comments separately.

The FRDA believes that the author of proposed code modification R4437 would have been better served if she had approached the industry with her concerns before making this proposed code change. The inclusion of lightweight insulating concrete (LWIC) in this existing code section was originally proposed by James Engskow and received the support of Miami-Dade, the TAC, and the Commission.

Placing a percentage on the acceptable moisture content for LWIC in the code would be detrimental and confusing. LWIC (LIGHTWEIGHT INSULATING CONCRETE) should not be confused with LWC (Lightweight Structural Concrete) as they are two entirely different materials. This confusion has caused problems in the past and care must be taken to distinguish between the two. The author has listed both in her abstract which is in itself reason to deny the proposal as it continues with this confusion. The Florida Building Code must be very clear in its intent as a public safety document to separate the two.

The FRDA has offered its resources to the author of this proposal and would suggest that we are an excellent source for accurate and complete information on LWIC and its application in Florida. This information has been gained through years of successful applications by our members. FRDA has an on-line Quality Assurance program and will respond promptly to all inquiries to the site. The appropriate manufacturer is involved immediately, and site visits can be promptly arranged for experienced persons to evaluate any LWIC issue. We would suggest that if there is confusion or question about the acceptable moisture content in any specific LWIC product, the FRDA quality assurance program would be an excellent and timely resource for any roofing consultant.

FISCAL IMPACT STATEMENT – Response of the FRDA

We believe the potential cost of this proposed amendment to local entities, consumers, and the industry will be substantial. Providing misleading information about acceptable moisture content will be confusing and will result in inaccurate assessments, adding confusion to the process for code enforcement personnel and contractors. Consumers may be substantially harmed financially, when improperly advised based on faulty information, to replace a roof deck that did not need replacing.

REQUIREMENTS – Response of the FRDA

This issue does have a reasonable connection with the health, safety & welfare of the general public.

The proposed code modification would weaken the code by adding substantial confusion regarding the differences between Lightweight Concrete and Lightweight Insulating Concrete, and by making inaccurate assumption regarding moisture content in LWIC.

This proposed code modification is discriminatory and singles out LWIC but leaves the other organic cementitious materials alone. Such an amendment is discriminatory of LWIC products and the industry.

This proposed code amendment will degrade the code by adding confusion.

Sub Code: Building

R4334

Date Submitted	4/1/2010	**Section**	1503.6	**Proponent**	Chuck Anderson
Chapter	15	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation No Affirmative Recommendation with a Second
Commission Action Pending Review

Related Modifications

Summary of Modification

Clarifies that skylights are to be installed and flashed in accordance with manufacturers instructions; provides an exception to requirement for crickets

Rationale

Eliminates confusion as to whether a cricket needs constructed.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

clarifies when crickets are not required

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

Requirements

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

requires proper installation as intended by the manufacturer.

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

clarifies use of crickets

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

clarifies

Alternate Language

2nd Comment Period 09/03/2010 - 10/18/2010

R4334-A10

Proponent Dwight Wilkes **Submitted** 10/18/2010 **Attachments** Yes

Rationale

For consistency within the code and the fact that Modifications 4264, 4332 and 4336 have been approved this Mod should be reconsidered

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

Lessens the cost to the contractor in trying to determine the use of an undefined phrase, "cricket or saddle".

Requirements

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

Yes, complies

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

Yes, complies

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

Complies

Does not degrade the effectiveness of the code

Complies

1503.6 Crickets or saddles. A cricket or saddle shall be installed on the ridge side of any chimney or penetration greater than 30 inches (762 mm) wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.

Exception: 1. Any penetration that allows water to flow around it shall not require a cricket or saddle.

2. Skylights installed and flashed in accordance with manufacturer's instructions

1503.6 Crickets and saddles. A cricket or saddle shall be installed on the ridge side of any chimney or penetration greater than 30 inches (762 mm) wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.

~~Exception: Any penetration that allows water to flow around it shall not require a creket or saddle.~~

Exception: Unit skylights installed in accordancee with section 2405.5 and flashed in acordance with the manufacturer's instructions shall be permitted to be installed without a cricket or saddle.

1503.6 Crickets or saddles. A cricket or saddle shall be installed on the ridge side of any chimney or penetration greater than 30 inches (762 mm) wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.

~~Exception: Any penetration that allows water to flow around it shall not require a cricket or saddle.~~

Exception: Unit skylights installed in accordance with Section 2405.5 and flashed in accordance with the manufacturer's instructions shall be permitted to be installed without a cricket or saddle.

1503.6 Crickets or saddles. A cricket or saddle shall be installed on the ridge side of any chimney or penetration greater than 30 inches (762 mm) wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.

Exception: 1. Any penetration that allows water to flow around it shall not require a cricket or saddle.

2. Skylights installed and flashed in accordance with manufacturer's instructions

R4217

Date Submitted	4/1/2010	**Section**	1504, 1507	**Proponent**	T Stafford
Chapter	15	**Affects HVHZ**	Yes	**Attachments**	Yes

TAC Recommendation No Affirmative Recommendation with a Second
Commission Action Pending Review

Related Modifications

See modifications to Sections 1602, 1603, 1605, 1609, 1620, 1405, 2109, 2304, 2308,3501

Summary of Modification

This modification is a correlation to the modification that updates ASCE 7 to the 2010 Edition and introduces new ultimate design wind speed maps in the code.

Rationale

This modification is a correlation to the modification that updates ASCE 7 to the 2010 Edition and introduces new ultimate design wind speed maps in the code. See attached supporting documentation.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This modification will impact local entities. Code officials will have to become familiar with a new wind speed map and new version of ASCE 7 that contains many new changes.

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

Design wind loads will generally decrease but not in all areas. The wind-borne debris region is expanded in some areas and reduced in others. Some building and property owners will see a decrease in cost of compliance with the code, some will see no change, and others may see an increase.

Impact to industry relative to the cost of compliance with code

Design wind loads will generally decrease but not in all areas. The wind-borne debris region is expanded in some areas and reduced in others. Some in the industry will see a decrease in cost of compliance with the code, some will see no change, and others may see an increase.

Requirements

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

This modification incorporates the latest knowledge and research on the determination of design wind loads on buildings and structures through the update to the 2010 Edition of ASCE 7.

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

This modification strengthens the code by updating to the latest edition of the standard that has been the basis for the determination of wind loads on buildings and structures since the inception of the Florida Building Code.

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

The proposed language is performance based and therefore does not discriminate against any other material, product, method, or system of construction.

Does not degrade the effectiveness of the code

The modification does not degrade the effectiveness of the code. The effectiveness of the code is enhanced by adopting the latest methods and design procedures for designing buildings for wind loads as given in ASCE 7-10.

2nd Comment Period 09/03/2010 - 10/18/2010

R4217-G2

Proponent T Stafford **Submitted** 10/18/2010 **Attachments** No

Comment:

This proposed code change should be approved for consistency with the Structural TAC action on the update to ASCE 7-10. The Structural TAC approved the proposal that updates the wind provisions and correlating code requirements to the 2010 edition of ASCE 7. This modification is necessary for coordination with ASCE 7-10.

1st Comment Period History 04/15/2010 - 06/01/2010

R4217-G1

Proponent Mohammed Shaikh **Submitted** 5/18/2010 **Attachments** Yes

Comment:

The proposed allowable wind speed is not in ASCE 7-10. This create a new category and adds to confusion. ASCE 7- 10 gives basic wind speed as design wind speed and uses factors to achieve strength and allowable designs.

21.

1504.5 Edge securement for low-slope roofs. Low-slope membrane roof system metal edge securement, except gutters, shall be designed and installed for wind loads in accordance with Chapter 16 and tested for resistance in accordance with ANSI/SPRI ES-1 or RAS 111 except the basic wind speed shall be determined from Figure 1609A, 1609B, or 1609C as applicable.

22.

1507.2.9.3 Drip edge. Provide drip edge at eaves and gables of shingle roofs. Overlap to be a minimum of 2 inches (51 mm). Eave drip edges shall extend ½ inch (13 mm) below sheathing and extend back on the roof a minimum of 2 inches (51 mm). Drip edge at eaves shall be permitted to be installed either over or under the underlayment. If installed over the underlayment, there shall be a minimum 4 inches (51 mm) width of roof cement installed over the drip edge flange. Drip edge shall be mechanically fastened a maximum of 12 inches (305 mm) on center. Where the V_{asd} as determined in accordance with Section 1609.3.1 ~~basic wind speed per Figure 1609~~ 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.

23.

TABLE 1507.2.7.1

WIND RESISTANCE OF ASPHALT SHINGLES

V_{asd} AS DETERMINED IN ACCORDANCE WITH SECTION 1609.3.1 ~~MAXIMUM BASIC WIND SPEED (per FIGURE 1609)~~	CLASSIFICATION
No change to remainder of table	

24.

1507.2.8.1 High wind attachment. Underlayment applied in areas subject to high winds (V_{asd} greater than 110 mph as determined in accordance with Section 1609.3.1 ~~in accordance with Figure 1609~~) shall be applied with corrosion-resistant fasteners in accordance with the manufacturer's instructions. Fasteners are to be applied along the overlap at a maximum spacing of 36 inches (914 mm) on center.

4217

Basic Wind Speed Maps (Strength Design Wind Speed Maps) are shown in Figures.26.5.1a, for Category II, 26.5.1b for Category III and IV and 26.5.1.C for Category I of ASCE 7-10.and are copied and renamed as Ultimate Wind Speed maps in Figure 1609A, 1609B and !609C. Revise the "Ultimate" to "Basic" to be consistent with ASCE 7-10 and avoid confusion. Delete Allowable Wind speed, because it is not in ASCE 7-10. The ASCE 7-10 standard deals Strength design with Combination Load Factors in section 2.3 and Allowable Stress design with Combination Load Factors in Section 2.4. Revise Modifications to use only Basic wind Speed and Combination Load Factors of 2.3 and 2.4 in this modification and other proposed modifications

Reason: The purpose of this proposal is to update and coordinate the provisions of the 2010 Florida Building Code, Building (FBCB) with those of the 2010 edition of ASCE 7 for the determination of wind loads. Although overall consisting of 31 small parts, the underlying reason for this change is to adopt into the 2010 FBCB the new wind speed maps that have been adopted into ASCE 7.

Over the past 10 years, new data and research has been performed that indicates that the hurricane wind speeds provided in the current maps of the FBCB and ASCE-05 (ASCE 7-02 and ASCE 7-98 as well) are too conservative and need to be adjusted downward. Significantly more hurricane data have become available thereby allowing for substantial improvements in the hurricane simulation model that is used to create the wind speed maps. These new data have resulted in an improved representation of the hurricane wind field, including the modeling of the sea-land transition and the hurricane boundary layer height; new models for hurricane weakening after landfall; and an improved statistical model for the Holland B parameter which controls the wind pressure relationship. The new hurricane hazard model yields hurricane wind speeds that are generally lower than those given in ASCE 7-05 and 2007 FBCB even though the overall rate of intense storms (as defined by central pressure) produced by the new model is increased compared to those produced by the hurricane simulation model used to develop previous maps.

In preparing the new maps, the ASCE 7 standards committee decided to use multiple ultimate event or strength design maps in conjunction with a wind load factor of 1.0 for strength design - for allowable stress design, the factor was reduced from 1.0 to 0.6. Several factors that are important to an accurate wind load standard led to this decision:

(i) An ultimate event or strength design wind speed map makes the overall approach consistent with that used in seismic design in that they both map ultimate events and use a load factor of 1.0 for strength design.

(ii) Utilizing different maps for the different Risk Categories eliminates the problems associated with using "importance factors" that vary with category. The difference in the importance factors in hurricane prone and non-hurricane prone regions for Category I structures prompted many questions and have been removed from ASCE 7-10.

(iii) The use of multiple maps eliminates the confusion associated with the recurrence interval associated with the existing map - the map was not a uniform fifty year return period map. This therefore created a situation where the level of safety provided for within the overall design was not consistent along the hurricane coast.

Utilizing the new wind speed maps and integrating their use into the FBCB necessitated the introduction of the terms Vult and Vasd to be associated with the "ultimate" design wind speed and the "nominal" design wind speed respectively. Because of the number of different provisions which use the wind speed map to "trigger" different requirements it was necessary to modify the conversion section (1609.3.1) so that those provisions were not changed. The terms "ultimate design wind speed" and "nominal design wind speed" were incorporate in numerous locations to aid in drawing the users attention to the different types of wind speeds - similar to what was done with the change from fastest mile to 3-second gust wind speeds.

Beyond the adoption of the new strength design wind speed maps, the 2010 edition of ASCE 7 also includes a new simplified method for use in the determination of wind loads for buildings up to 160' in height. In addition, the wind load calculation provisions have been removed from Chapter 6 of ASCE 7 and been reorganized into 6 separate chapters (26 thru 31) for the sake of clarity and ease of use. This of course necessitated multiple coordination revisions with the IBC text. Additionally, Exposure Category D is reintroduced for water surfaces in hurricane-prone regions.

ASCE/SEI 7 has been a referenced standard of the FBCB since its inception and as such it is well known to the building community. ASCE/SEI 7 is published and maintained by the Structural Engineering Institute of the American Society of Civil Engineers (SEI/ASCE). The document is a nationally recognized consensus standard developed in full compliance with the ASCE Rules for Standards Committees. The ASCE standards process is fully accredited by the American National Standards Institute (ANSI).

As of the submission date of this code change, the 2010 edition of ASCE/SEI 7 is in the process of being printed. The document is designated ASCE/SEI 7-10 Minimum Design Loads for Buildings and Other Structures and it is expected that it will be completed and available for purchase in May of 2010 .

R4201

Date Submitted	3/31/2010	**Section**	1507	**Proponent**	T Stafford
Chapter	15	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation No Affirmative Recommendation with a Second
Commission Action Pending Review

Related Modifications

See modification to Section R905, Mod #. 4202 in the FBC, Residential.

Summary of Modification

This proposal specifies methods for a secondary water barrier under roof coverings for new construction.

Rationale

This proposal specifies methods for a secondary water barrier under roof coverings for new construction that is similar to Section 611.7.2 in the 2007 FBCEB which applies to SWB's for re-roofing applications on site-built single family residential structures. See attached supporting documentation.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This modification will have a negligible impact to local entities regarding enforcement of the code since the modification requires the use of materials that are already required by the code.

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

This modification will increase the cost to building and property owners relative to compliance with the code.

Impact to industry relative to the cost of compliance with code

This modification will increase the cost to the industry relative to compliance with the code.

Requirements

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

This modification is directly related to the health, safety and welfare of the general public by improving the building's resistance to water penetration in the event the primary roof covering is lost in a hurricane.

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

This proposal strengthens the code by requiring a secondary level of water protection for the building in the event the primary roof covering is lost during a hurricane.

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

This modification doesn't discriminate against any materials, products, methods, or systems as multiple options are permitted to achieve the level of protection desire.

Does not degrade the effectiveness of the code

This proposal strengthens the code by requiring a secondary level of water protection for the building in the event the primary roof covering is lost during a hurricane.

2nd Comment Period 09/03/2010 - 10/18/2010

Proponent T Stafford **Submitted** 10/18/2010 **Attachments** No

R4201-G1

Comment:

This modification was not approved because these provisions are not in the 2009 IBC. However, a very similar version has been approved for the 2012 IBC which will be printed and available around May 2011 and subsequently adopted in some jurisdictions shortly after its availability. Just because it's not in the 2009 IBC is not a very good reason for not approving new code language. This new language will significantly improve the resistance of buildings to water damage in the event the roof covering is lost. The State of Florida has generally been a leader when it comes to design of buildings for hurricanes. When this proposal was approved at the ICC hearings, it had the support of ARMA and NAHB. It only applies where the basic wind speed is greater than 120 mph and reflects a compromise on methods for establishing a secondary water barrier for buildings. This modification represents a positive step forward to providing additional resistance to water damage from hurricanes for the citizens of Florida.

1.

1507.2.8.1 High wind attachment. Underlayment installed where the basic wind speed equals or exceeds 110 mph ~~applied in areas subject to high winds [above 110 mph (49 m/s) per Figure 1609]~~ shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914mm)on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II, ASTM D 4869 Type IV, or ASTM D 6757. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6 inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with Section 1507.2.8 except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gage with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

2.

1507.3.3.3 High wind attachment. Underlayment installed where the basic wind speed equals or exceeds 110 mph shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph (54 m/s) shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6 inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with Section 1507.3.3.1 except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

3.

1507.4.5.1 Underlayment and high wind. Underlayment installed where the basic wind speed equals or exceeds 110 mph shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914mm)on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II, ASTM D 4869 Type IV, or ASTM D 1970. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6 inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 (25.4 mm) inches with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

4.

1507.5.3.1 Underlayment and high wind. Underlayment installed where the basic wind speed equals or exceeds 110 mph shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914mm)on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6 inch spacing (152 mm) at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inches (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

5.

1507.6.3.1 Underlayment and high wind. installed where the basic wind speed equals or exceeds 110 mph shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914mm)on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6 inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inches (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

6.

1507.7.3.1 Underlayment and high wind. Underlayment installed where the basic wind speed equals or exceeds 110 mph shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914mm)on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6 inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inches (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

7.

1507.8.3.1 Underlayment and high wind. Underlayment installed where the basic wind speed equals or exceeds 110 mph shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914mm) on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6 inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inches (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

8.

1507.9.3.1 Underlayment and high wind. Underlayment installed where the basic wind speed equals or exceeds 110 mph shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914mm) on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph (54 m/s) shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6 inch (152 mm) spacing at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches (102 mm). Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inches (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted

Reason: This proposal sets requirements for a SWB that is similar to Section 611.7.2 in the 2007 FBCEB which applies to SWB's for re-roofing applications on site-built single family residential structures. The goal is to provide a secondary level of water protection to the building in the event the primary roof covering is lost due to a wind event. Observations of roof underlayment performance following Hurricane Ike in Texas and in two sets of tests conducted at the University of Florida and Florida International University demonstrated that relatively new and new ASTM 226 Type I underlayments performed very poorly when subjected to wind over about 110 mph. In the laboratory tests, specimen covered with ASTM 226 Type I and Type II underlayments performed dramatically differently. ASTM Type I felt (15#) material completely blew off some portions of the specimen as winds exceeded 110 mph and pulled over the plastic caps on other parts of the specimen. In contrast, the ASTM 226 Type II (30#) material remained in place and showed very few signs of distress.

A very similar proposal to the 2012 IRC was approved by the IRC Code Development Committee at the ICC Code Development hearings in Baltimore. This proposal is also similar to Section 611.7.2 in the FBCEB which applies to SWB's for re-roofing applications on site-built single family residential structures.

R4272

Date Submitted	4/1/2010	**Section**	New 1505.8	**Proponent**	Mike Ennis
Chapter	15	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation No Affirmative Recommendation with a Second
Commission Action Pending Review

Related Modifications

Summary of Modification

Add a new section to the code (1505.8) to define the method designing a vegatative (Garden) roof for fire resistance as required by the code.

Rationale

Section 1507.16 requires that roof gardens and landscaped roofs comply with the requirements of Chapter 15. Section 1505 requires that roofing assemblies be fire classified. The current test procedures used to provide this fire classification are not applicable to garden and landscape roofs. ANSI/SPRI VF-1 is a national consensus standard that provides a design method to assure an acceptable level of performance of roof gardens and landscaped roofs when exposed to exterior fire sources.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Provides a method for enforcing a requirement in Chapter 15 of the code.

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

This code change proposal will not impact the cost of complying with the code.

Impact to industry relative to the cost of compliance with code

This code change proposal will not impact the cost of complying with the code.

Requirements

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

Vegetative roofs are being used more often as a means to increase the sustainability of the roof system. The building code requires that these roofs be evaluated for fire resistance but provides no method of doing so.

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

The building code requires that these roofs be evaluated for fire resistance but provides no method of doing so. This mehtod provides the means to design a fire resistant garden roof.

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

This methodis a national consensus standard and has received input from all parts of the vegetative roofing industry including manufacturers, contractors, green roofing professionals, consultants and testing organizations.

Does not degrade the effectiveness of the code

This code change proposal does not degrade the effcetiveness of the code, instead it enhances the effectiveness of the code by providing a means to enforce code requirements to evaluate vegetative roof systems for fire spread resistance.

2nd Comment Period 09/03/2010 - 10/18/2010

Proponent Mike Ennis **Submitted** 10/5/2010 **Attachments** Yes

R4272-G1

Comment:

This is the language that was added to the International Fire Code. This is intended to provide supplementary information to R4272-G1.

SECTION 316.0

ROOF GARDENS AND LANDSCAPED ROOFS

316.1 General. Rooftop gardens and landscaped roofs shall be installed and maintained in accordance with this code and Sections 1505.0 and 1507.16 of the International Building Code.

316.2 Rooftop garden or landscaped roof size. Rooftop garden or landscaped roof areas shall not exceed 15,625 ft2 (1,450 m2) in size for any single area with a maximum dimension of 125 ft (39 m) in length or width. A minimum 6 ft (1.8 m) wide clearance consisting of a Class A rated roof system complying with ASTM E108 or UL790 shall be provided between adjacent rooftop garden or landscaped roof areas.

316.3 Rooftop structure and equipment clearance. For all vegetated roofing systems abutting combustible vertical surfaces, a Class A-rated roof system complying with ASTM E108 or UL790 shall be achieved for a minimum 6 ft (1.8 m) wide continuous border placed around
rooftop structures and all rooftop equipment including, but not limited to, mechanical and machine rooms, penthouses, skylights, roof vents, solar panels, antenna supports, and building service equipment.

316.4 Vegetation. Vegetation shall be maintained as described in Sections 316.4.1 and 316.4.2

316.4.1 Irrigation. Supplemental irrigation shall be provided as necessary to maintain levels of hydration necessary to keep green roof plants alive
and to keep dry foliage to a minimum.

316.4.2 Dead foliage. Excess biomass, such as overgrown vegetation, leaves and other dead and decaying material, shall be removed at regular intervals not less than two times per year.

905.3.8 (IBC [F] 905.3.8) Roof gardens and landscaped roofs. Buildings or structures with roof gardens or landscaped roofs that are equipped with a standpipe shall extend the standpipe to the roof level on which the roof garden or landscaped roof is located.

R4272-G2

Proponent Mike Ennis **Submitted** 10/5/2010 **Attachments** Yes

Comment:

Effective with the 2009 version of the International Building Code, Section 1507.16 requires that Roof Gardens and Landscaped Roofs meet the requirements of Chapter 15. In part this emans that these roofs must be evaluated for fire spread resistance, however no guidance is provided on how to do this. During the 2009/2010 IBC code chnage cycle several options for addressing this issue were submitted. The option that was selected was to extract the design requirements from ANSI/SPRI VF-1 External Fire Design Standard for Vegetative Roofs and include them in the Internation Fire Code. The exact wording is provided in the attached document. While this provides a solution to locations that use both the IBC and IFC it does not provide a solution for Florida since Florida does not follow the IFC. Please recommend the code chnage proposal as submitted to provide a method to comply with the requirements of Section 1507.16.

1505.8 Roof gardens and landscaped roofs. Roof gardens and landscaped roofs shall comply with Section 1507.16 and shall be installed in accordance with ANSI/SPRI VF-1.

I have also submitted a general comment on this code chnage proposal to recommend approval as submitted. If the TAC does not feel this is appropriate, then another option would be to adopt the language that was included in the International Fire Code, but write it in the Florida Building code since Florida does not follow the IFC. The attached docment provides the proposed wording.

1505.8 Roof gardens and landscaped roofs. Roof gardens and landscaped roofs shall comply with Section 1507.16 and shall be installed in accordance with ~~ANSI/SPRI VF-1~~ Sections 1505.8.1 to 1505.8.5.

1505.8.1 General. Rooftop gardens and landscaped roofs shall be installed and maintained in accordance with this code and Sections 1505.0 and 1507.16 of the International Building Code.

1505.8.2 Rooftop garden or landscaped roof size. Rooftop garden or landscaped roof areas shall not exceed 15,625 ft2 (1,450 m2) in size for any single area with a maximum dimension of 125 ft (39 m) in length or width. A minimum 6 ft (1.8 m) wide clearance consisting of a Class A rated roof system complying with ASTM E108 or UL790 shall be provided between adjacent rooftop garden or landscaped roof areas.

1505.8.3 Rooftop structure and equipment clearance. For all vegetated roofing systems abutting combustible vertical surfaces, a Class A-rated roof system complying with ASTM E108 or UL790 shall be achieved for a minimum 6 ft (1.8 m) wide continuous border placed around rooftop structures and all rooftop equipment including, but not limited to, mechanical and machine rooms, penthouses, skylights, roof vents, solar panels, antenna supports, and building service equipment.

1505.8.4 Vegetation. Vegetation shall be maintained as described in Sections 316.4.1 and 316.4.2

1505.8.4.1 Irrigation. Supplemental irrigation shall be provided as necessary to maintain levels of hydration necessary to keep green roof plants alive and to keep dry foliage to a minimum.

1505.8.4.2 Dead foliage. Excess biomass, such as overgrown vegetation, leaves and other dead and decaying material, shall be removed at regular intervals not less than two times per year.

1505.8.5 Buildings or structures with roof gardens or landscaped roofs that are equipped with a standpipe shall extend the standpipe to the roof level on which the roof garden or landscaped roof is located.

ANSI/SPRI VF-1
External Fire Design Standard for Vegetative Roofs

This standard was developed in cooperation with Green Roofs for Healthy Cities.

Approved January 29, 2010

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Disclaimer

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

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External Fire Design Standard for Vegetative Roofs

Approved January 29, 2010

1.0 Introduction

This design standard provides a method for designing external fire resistance for vegetative roofing systems. It is intended to provide a minimum design and installation reference for those individuals who design, specify, and install vegetative roofing systems. It shall be used in conjunction with the installation specifications and requirements of the manufacturer of the specific products used in the vegetative roofing system.

2.0 Definitions

The following definitions shall apply when designing a vegetative roofing system.

2.1 Ballast
In vegetative roofing systems; ballast consists of growing media, the trays or containers used to contain growing media, large stones, paver systems or lightweight interlocking pavers.

2.2 Border zone
The band around the edge of the vegetative plantings where no vegetation exists. It is frequently the perimeter of the roof area.

2.3 Firestops
Area capable of stopping the spread of flame.

2.4 Gravel stop
A low upward-projecting edge, usually formed from sheet or extruded metal, installed along the perimeter of a roof to prevent gravel or other small or lightweight aggregate from being blown or washed off. The gravel stop also serves as a point of termination for the roofing system.

2.5 Growing media
An engineered formulation of inorganic and organic materials including but not limited to heat-expanded clays, slates, shales, aggregate, sand, perlite, vermiculite and organic material including but not limited to compost worm castings, coir, peat, and other organic material.

2.6 Parapet
A parapet wall is a structure that rises above the roof edge to provide a wall of varying heights. The part of a perimeter wall that extends above the roof.

2.7 Penetration
A penetration is an object that passes through the roof structure and rises above the roof deck/surface. Penetrations consist of, but are not limited to, mechanical buildings, penthouses, ducts, pipes, expansion joints and skylights

2.8 Roof areas
For design and installation purposes, the roof surface is divided into the following areas:

2.8.1 Corners
The space between intersecting walls forming an angle greater than 45 degrees but less than 135 degrees.

2.8.2 Corner areas
The corner area is defined as the roof section with sides equal to 40% of the building height. The minimum length of a corner is 8.5 ft. (2.6 m).

2.8.3 Perimeter
The perimeter area is defined as the rectangular roof section parallel to the roof edge and connecting the corner areas with a width measurement equal to 40% of the building height, but not less than 8.5 ft. (2.6 m).

2.8.4 Field
The field of the roof is defined as that portion of the roof surface, which is not included in the corner or the perimeter areas as defined above.

2.9 Succulent
A plant with thick fleshy leaves and stems that can store water.

2.10 Grasses
Slow growing, narrow leaved plants. Grasses can be maintained by mowing.

2.11 Vegetative roofing system
A vegetative roofing system consists of vegetation, growing media, the trays or containers used to contain growing media, large stones, paver systems or lightweight interlocking pavers, drainage system, and waterproofing over a roof deck.

3.0 System requirements & general design considerations

3.1 Roof structure design or evaluation
The building owner shall consult with a licensed design professional such as an architect, architectural engineer, civil engineer, or structural engineer to verify that the structure and deck will support fully hydrated growing media, vegetation and other material or objects installed on the roof deck in combination with all other design loads.

3.2 Membrane requirements
The membrane specified for use in the vegetative system shall meet the recognized industry minimum material requirements for the generic membrane type, and shall meet the specific requirements of its manufacturer. When the membrane or system is not impervious to root penetration a root barrier shall be installed.

3.3 Slope
This Design Standard is limited to roof slope designs up to 2 in 12. For slopes greater than 2 in 12, a design professional experienced in vegetative roof design shall provide the design and the design shall be approved by the authority having jurisdiction.

3.4 Fire stops

3.4.1 Walls
Fire stop walls shall be of non-combustible construction complying with the applicable building code and extend above the roof surface a minimum of 36 in. (914 mm).

3.4.2 Fire break roof areas
Fire break roof areas shall consist of a class A (per ASTM E108 or UL790) rated roofing system for a minimum 6 ft. (1.8 m) wide continuous border.

3.5 Interior fire rating: steel decks: concrete decks
Interior fire resistance shall comply with the design fire penetration requirements based on use and occupancy and be determined to meet interior fire resistance requirements for the system installed beneath the soil media.

3.6 Exterior fire rating
Construct the roofing system inclusive of roof decks, vapor barriers, insulations, roofing membranes, flashings, roof drainage components, growing media and vegetation to conform to the designed fire resistance requirements as determined by the building code for the building considered.

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3.7 Wind design
The vegetative roofing system shall be designed for wind resistance before beginning the design process for fire resistance. Vegetative roofing systems shall be designed to the requirements of SPRI RP 14, "Wind Design Standard for Vegetative Roofing systems" or other design standards as approved by the authority having jurisdiction.

4.0 Vegetative roof design options
Fire-resistant vegetative roof designs include, but are not limited to, the generic systems described below. Other systems, when documented or demonstrated as equivalent to the provisions of this standard, are permitted to be used when approved by the authority having jurisdiction (See Commentary Section 4.0). When there is a conflict between this standard and the wind design requirements the design with the more conservative requirement shall be used.

4.1 Generic fire resistive vegetative systems

4.1.1 Succulent based systems
Systems where the vegetative portion of the roof is planted in growing media that is greater than 80% inorganic material, and the vegetation consists of plants that are classified as succulents. Non-vegetative portions of the rooftop shall be systems that are classified ASTM E108, Class A.

4.1.2 Grass based systems
Systems where the vegetative portion of the roof is planted in growing media that is greater than 80% inorganic material, and the vegetation consists of plants that are classified as grass. Non-vegetative portions of the rooftop shall be systems that are classified ASTM E108, Class A.

4.2 Fire protection for roof top structures and penetrations
For all vegetative roofing systems abutting combustible vertical surfaces, a Class A (per ASTM E108 or UL790) rated roofing system shall be achieved for a minimum 6 ft. (1.8 m) wide continuous border placed around rooftop structures and all rooftop equipment.

4.3 Spread of fire, protection for large area roofs
A firestop as described in Section 3.4 shall be used to partition the roof area into sections not exceeding 15,625 ft^2 (1,450 m^2), with each section having no dimension greater than 125 ft. (39 m). Incorporate the border zones into expansion joints or roof area dividers wherever possible.

4.4 Fire hydrants
Access to one or more fire hydrants shall be provided.

4.5 Border zones
Border zones are required when terminating at a fire barrier wall.

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5.0 Maintenance
Maintenance shall be provided as needed to sustain the system keeping vegetative roof plants healthy and to keep dry foliage to a minimum; such maintenance includes, but is not limited to irrigation, fertilization, weeding. Excess biomass such as overgrown vegetation, leafs and other dead and decaying material shall be removed at regular intervals not less than two times per year. Provision shall be made to provide access to water for permanent or temporary irrigation. The requirement for maintenance shall be conveyed by the designer to the building owner, and it shall be the building owners responsibility to maintain the vegetative roofing system.

Commentary to VF-1

This Commentary consists of explanatory and supplementary material designed to assist designers and local building code committees and regulatory authorities in applying the requirements of the preceding standard.

The Commentary is intended to create an understanding of the requirements through brief explanations of the reasoning employed in arriving at them.

The sections of this Commentary are numbered to correspond to the sections of the VF-1 standard to which they refer. Since it is not necessary to have supplementary material for every section in the standard, there are gaps in the numbering of the Commentary.

C1.0 Introduction

Green roofs, also known as vegetative roofs, eco-roofs, and rooftop gardens fall into two main categories: intensive is primarily defined as having more than 6 inches of growing media, greater loading capacity requirements, and greater plant diversity, and extensive, defined as having less than 6 inches of growing media, less loading capacity requirements and fewer options for plants.

Vegetative roofs are complex systems consisting of many parts critical to the functioning of the system. To name a few of the components that are generally found in the system, but the system is not limited to these products: insulation, waterproofing membrane, protection mats/boards, root barrier, drainage layer, filter fabric, growing media, and vegetation. A vegetative roof may consist of more than just growing media and vegetation, but include such things as walkways, water features, stone decoration, and benches.

A vegetative roof may cover the whole roof or share a portion of the surface with a conventional roofing system. They are versatile systems with many strong attributes including stormwater management, reduction of the heat island effect, and aesthetics to name a few.

VF-1 is a minimum standard. Manufactures and /or designers requirements that exceed the standards minimum requirements can be incorporated into specifications for vegetative roof fire resistance.

While the standard is intended as a reference for designers and roofing contractors, the design responsibility rests with the “designer of record.”

C2.1 Ballast

Ballast includes the growing media and the trays and containers that are used to contain growing media. The type of growing media used as ballast in vegetative roofs can influence the fire performance of the system. Stones, pavers, and concrete surfaces are often used as ballast and are non-combustible.

C2.5 Growing media

Inorganic materials used as growing media are not combustible, however media with high concentrations of organic material can support combustion. Soils with high percentages of organic material can negatively affect the fire resistance of a system. Currently data is unavailable on specific growing media blends, but it is known that media with high loadings of organic material such as peat moss can burn.

Sources for growing media specifications are as follows:

From ASTM

C549-06	Standard Specification for Perlite Loose Fill Insulation
C330-05	Standard Specification for Lightweight Aggregates for Structural Concrete
C331-05	Standard Specification for Lightweight Aggregates for Concrete Masonry Units
C332-07	Standard Specification for Lightweight Aggregates for Insulating Concrete

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Test Methods for classifying material

C117-04	Standard Test Method for Materials Finer than 75-µm (No.200) Sieve in Mineral Aggregates by Washing
C136-06	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
D5975-96 (2004)	Standard Test Method for Determining the Stability of Compost by Measuring Oxygen Consumption.
	US Composting Council: "TMECC" Test Methods for the Examination of Composting and Compost.

C2.7 Penetration

Penetrations may consist of, but are not limited to, mechanical buildings, penthouses, ducts, pipes, expansion joints and skylights. These penetrations may be combustible or fire may have a major impact on their performance. For these reasons, penetrations need to be protected from fire exposure.

C2.11 Vegetative roofing system

Vegetative roofing systems will go over both loose-laid, mechanically fastened, and fully adhered roofing systems. However, when a mechanically attached roofing system is used special precautions need to be taken to prevent damage to the membrane due to the fastener and plates below the membrane and impact damage and wear that can occur at these locations. Mechanically attached systems should not be used unless approved by the membrane supplier of vegetative roofs, and all precautions from the supplier are followed.

There are several types of vegetative roofing systems as noted below, and they can be interchanged without affecting the fire performance of the system.

Ballasted vegetative roofing system
A ballasted vegetative roofing system consists of vegetation; ballast as defined in 2.1, provides waterproofing and includes a membrane or membrane and substrate materials installed over a structural deck capable of supporting the system. Membranes are permitted to be loose laid, mechanically attached or partially adhered to the roof deck or supporting insulation.

Protective vegetative roofing system
A protected vegetative roofing system consists of vegetation, growing media, ballast as defined in 2.1, a fabric that is pervious to air and water, insulation, and includes a membrane that provides waterproofing and substrate materials installed over a structural deck capable of supporting the system. Membranes are permitted to be loose laid, mechanically attached or partially or fully adhered to the roof deck or supporting insulation.

Vegetative roofing system suing a fully adhered roof membrane system
A vegetative roofing system using a fully adhered membrane system consists of vegetation, growing media, ballast as defined in 2.1, and includes a membrane that provides waterproofing and is fully adhered to attached insulation, or adhered directly to a roof deck.

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C3.2 Membrane requirements

List of ASTM references for generic roofing types

EPDM	ASTM D-4637
PVC	ASTM D-4434
TPO	ASTM D-6878
HYPALON/CPE/PIB	ASTM D-5019
KEE	ASTM D-6754
SBS	ASTM D-6164, 6163, 6162
APP	ASTM D-6222, 6223, 6509
BUR	As defined by the standards referenced in the International Building code
	Fully adhered hot-applied reinforced waterproofing system ASTM D 6622

Building height

Special consideration shall be given when the building height is greater than 150 ft. (45.7 m). Vegetative roofs can be designed using reference 1, consultation with a wind design engineer, or wind tunnel studies and fire design experience of the specific building and system.

Other factors

There are other factors that affect the design of the vegetative roof for wind and fire. These include, but are not limited to, building height, building location, pressurized buildings, large openings, eaves and overhangs.

C3.5 Exterior fire rating

Building codes are specific as to the requirements for the roofing system fire resistance based on designated occupancy. Roofing systems may be required to obtain ASTM E 108 Class A, B or C. Data exists that supports the Classification of succulent based systems as Class A fire resistance. Other systems may be tested for fire resistance as installed, but the vegetation needs to be maintained in order to continue to sustain fire resistance. Provisions need to be made so the vegetation installed on the roof will have sustainable resistance to the spread of flame as required by the building code.

C3.6 Wind design

Vegetative roofs are not recommended where the basic wind speed is greater than 140 mph (225 kph). However, they can be designed using reference 1, consultation with a wind design engineer, or wind tunnel studies of the specific building and system. The "authority having jurisdiction" is the only source for approval of designs not covered in this document. ASCE 7 gives guidance on how non-standard conditions should be evaluated.

C4.0 Vegetative roof design options

The Design Options of Section 4 were developed to provide a barrier to prevent the spread of fire from the vegetative section of the roof to other parts of the building. These design options were developed from European experience, forest fire prevention, and roofing experience. Vegetative "Green Roofs" have an excellent history of resisting fire damage.

Some vegetation, such as succulents, are very fire resistive. Local code officials may consider waiving the barrier requirements when fire resistive vegetation is installed.

ASTM E-108 and UL 790 can be used to test vegetative roofing systems. Modifications of the test standards may be able to provide a meaningful test for selected conditions. However, with all the plant types that could be used in a roof design, the varying weather conditions that occur through the year, and the effects of seasons generate many variables that limit the potential to classify a roof construction. For this reason, if the roof is being

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designed with little or no maintenance planned; fire rated barriers are required.

Given that wind standards may often require greater areas of non-vegetative roof, the wind standard will most often determine the size of the perimeter area or border zones.

C4.2 Fire protection for roof top structures and penetrations
Pavers are often used as Class A or non-combustible separators. Care should be taken when installing pavers to avoid damaging the membrane. Some manufacturers require a separation material between the paver and the membrane.

C4.3 Spread of fire, protection for large area roofs
Spread of flame for Class A fire is limited to 6 ft. (1.8 m), if there is a 6 ft. break separating vegetative areas using Class A material or non combustible material the flame spread is not expected to ignite the nearby area. The dimensions chosen for large area roof limitations are based on FLL and FM requirements, they also coincide with the International Building Codes Area limitations for Assembly buildings.

C5.0 Maintenance
The building owner needs to properly maintain a vegetative roof. One of the important ways of preventing fires is to keep the roof adequately watered. The need for water will vary greatly due to climate and types of plants chosen. Designers should be aware that plantings are to be specific for the roof being installed and that rooftops are at best hostile places for vegetation. Removal of dead foliage should occur on a regular interval, for most roofs and that may be at least once a month. The moisture level of the growing media should be checked weekly. By regularly removing excess biomass that could become fuel for a fire on the rooftop, the risk of fire spreading beyond the 6 foot (1.8 m) Class A fire rated separation setback to combustible vertical surfaces is minimized.

Best management practices for maintenance include regular weeding, fertilization, and removal of dead/dormant vegetation in accordance with the recommendations of the green roof provider. Specific directions for the proper maintenance of the vegetative cover should be furnished by the green roof provider.

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References

1. Kind, R.J. and Wardlaw, R.L., Design of Rooftops Against Gravel Blow-Off, National Research Council of Canada, Report No. 15544, September 1976.
2. FM Global: Property Loss Prevention Data Sheets 1-35 Green Roof Systems
3. FM Global: Approval Standard for Vegetative Roof Systems Class Number 4477 Draft April 2009
4. FLL Standard “Guideline for the Planning, Execution and Upkeep of Green-Roof Sites”, Forschungsgesellschaft Landschaftsentwicklung Landschaftsbau e.V. – FLL, Colmantstr, Bonn, Germany.

SECTION 316.0

ROOF GARDENS AND LANDSCAPED ROOFS

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316.3 Rooftop structure and equipment clearance. For all vegetated roofing systems abutting combustible vertical surfaces, a Class A-rated roof system complying with ASTM E108 or UL790 shall be achieved for a minimum 6 ft (1.8 m) wide continuous border placed around rooftop structures and all rooftop equipment including, but not limited to, mechanical and machine rooms, penthouses, skylights, roof vents, solar panels, antenna supports, and building service equipment.

316.4 Vegetation. Vegetation shall be maintained as described in Sections 316.4.1 and 316.4.2

316.4.1 Irrigation. Supplemental irrigation shall be provided as necessary to maintain levels of hydration necessary to keep green roof plants alive and to keep dry foliage to a minimum.

316.4.2 Dead foliage. Excess biomass, such as overgrown vegetation, leaves and other dead and decaying material, shall be removed at regular intervals not less than two times per year.

905.3.8 (IBC [F] 905.3.8) Roof gardens and landscaped roofs. Buildings or structures with roof gardens or landscaped roofs that are equipped with a standpipe shall extend the standpipe to the roof level on which the roof garden or landscaped roof is located.

SECTION 316.0

ROOF GARDENS AND LANDSCAPED ROOFS

316.1 General. Rooftop gardens and landscaped roofs shall be installed and maintained in accordance with this code and Sections 1505.0 and 1507.16 of the International Building Code.

316.2 Rooftop garden or landscaped roof size. Rooftop garden or landscaped roof areas shall not exceed 15,625 ft2 (1,450 m2) in size for any single area with a maximum dimension of 125 ft (39 m) in length or width. A minimum 6 ft (1.8 m) wide clearance consisting of a Class A rated roof system complying with ASTM E108 or UL790 shall be provided between adjacent rooftop garden or landscaped roof areas.

316.3 Rooftop structure and equipment clearance. For all vegetated roofing systems abutting combustible vertical surfaces, a Class A-rated roof system complying with ASTM E108 or UL790 shall be achieved for a minimum 6 ft (1.8 m) wide continuous border placed around rooftop structures and all rooftop equipment including, but not limited to, mechanical and machine rooms, penthouses, skylights, roof vents, solar panels, antenna supports, and building service equipment.

316.4 Vegetation. Vegetation shall be maintained as described in Sections 316.4.1 and 316.4.2

316.4.1 Irrigation. Supplemental irrigation shall be provided as necessary to maintain levels of hydration necessary to keep green roof plants alive and to keep dry foliage to a minimum.

316.4.2 Dead foliage. Excess biomass, such as overgrown vegetation, leaves and other dead and decaying material, shall be removed at regular intervals not less than two times per year.

905.3.8 (IBC [F] 905.3.8) Roof gardens and landscaped roofs. Buildings or structures with roof gardens or landscaped roofs that are equipped with a standpipe shall extend the standpipe to the roof level on which the roof garden or landscaped roof is located.

R4391

Date Submitted	4/2/2010	**Section**	New appendix	**Proponent**	Doug Harvey
Chapter	2711	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation No Affirmative Recommendation with a Second
Commission Action Pending Review

Related Modifications

Add code reference to chapter 35 including the edition date.

Summary of Modification

Add a new Appendix “XX” (Designation to be assigned)

Rationale

Please see support document for rationale.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This proposed change does not impact local enforcement, it merely provides an alternate path for design that adhere to the Florida Building Code

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

No fiscal impact to the building owner is anticipated

Impact to industry relative to the cost of compliance with code

No fiscal impact to the industry is anticipated

Requirements

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

This proposed change protects the health, safety and welfare by allowing the code compliant use of “green” ideas and technologies

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

This proposed change improves the code for design consistency

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

This proposed code change does not discriminate

Does not degrade the effectiveness of the code

This proposed change does not degrade the effectiveness of the code.

2nd Comment Period 09/03/2010 - 10/18/2010

R4391-G3

Proponent Arlene Stewart **Submitted** 10/18/2010 **Attachments** No

Comment:

TAC action should be reconsidered. Reason for disapproval was that the code was not yet final. However, the IGCC is available at http://www.iccsafe.org/cs/IGCC/Pages/default.aspx?r=IGCC. It is listed as the public version and not listed as a draft.

2nd Comment Period 09/03/2010 - 10/18/2010

R4391-G4

Proponent Thomas Allen **Submitted** 10/18/2010 **Attachments** No

Comment:

Support: IGCC to be included in the Florida Building Code in an appendix.
An appendix is adopted locally
This would provide an easily adopted green code that is designed to work with the building code

1st Comment Period History 04/15/2010 - 06/01/2010

R4391-G1

Proponent Doug Harvey **Submitted** 6/1/2010 **Attachments** No

Comment:

BOAF has suggested the International Green Construction Code (IGCC) be included as an adoptable appendix. While many ideas for “green” and green construction are present in the marketplace today, no other document has been through the process the IgCC has. This document has been compared to the base codes for Building, Mechanical, Plumbing, Fuel Gas and Energy. The code has been scrutinized so as to prevent conflicts between building code requirements and green/sustainable requirements. The IgCC has been evaluated and endorsed by the USGBC and ASHRAE as well through the national consensus process. Many areas are in the process of trying to adopt “green” standards for their communities. This will provide a method for jurisdictions looking to mandate greener and more sustainable requirements. In addition, this document was created in conjunction with ASHRAE, ICC and others, including public meetings, to ensure compatibility with many of the existing requirements in existence today and with a forward looking approach. While this is a relatively new document, inclusion as an adoptable appendix will offer an option that will help with code compliance, not code violation or putting different standards at odds with each other.

1st Comment Period History 04/15/2010 - 06/01/2010

R4391-G2

Proponent Jack Glenn **Submitted** 6/1/2010 **Attachments** No

Comment:

The new appendix is based on a proposed standard that is not yet approved.

APPENDIX 'XX' (Designation to be assigned)

International Green Construction Code (IGCC)

The provisions in this appendix are not mandatory unless specifically referenced in the adopting ordinance

SECTION (XX) 101

GENERAL

(XX) 101.1 Scope. The provisions of this appendix are applicable to all occupancies covered by the International Green Construction Code (IGCC).

(XX) 101.2 Intent. The intent of this appendix is to provide direction for communities having a desire to preserve natural resources, especially water, and lessen the impact of construction on the built environment. Adoption of this standard is to safeguard the environment, public health, safety and general welfare through the establishment of requirements to reduce the negative potential impacts and increase the potential positive impacts of the built environment and building occupants, by means of minimum requirements to: conservation of natural resources, materials and energy; the employment of renewable energy technologies, indoor and outdoor air quality; and building operations and maintenance.

(XX) 101.3 Requirements. The design of buildings shall be in accordance with the International Green Construction Code (IGCC).

Add the Following to Chapter 35 – references:

ICC

International Code Council, Inc.

500 New Jersey Avenue, NW

6th Floor

Washington, DC 20001

Standard Referenced: IGCC

Title: **International Green Construction Code (IGCC)**

Reference in code section number: Appendix L

Date Submitted	April 2, 2010
Mod Number	
Code Version	2010
Code Change Cycle	2010 Triennial Original Modifications 03/01/2010/-/04/02/2010
Sub-code	Building
Chapter Topic	Appendix, International Green Construction Code
Section	Appendix
Related Modification	Add code reference to chapter 35 including the edition date.
Affects HVHZ	No
Summary of modification	Add a new Appendix "XX" (Designation to be assigned)
Text of Modification	APPENDIX 'XX' (Designation to be assigned) International Green Construction Code (IGCC) The provisions in this appendix are not mandatory unless specifically referenced in the adopting ordinance SECTION (XX) 101 GENERAL (XX) 101.1 Scope. The provisions of this appendix are applicable to all occupancies covered by the International Green Construction Code (IGCC). (XX) 101.2 Intent. The intent of this appendix is to provide direction for communities having a desire to preserve natural resources, especially water, and lessen the impact of construction on the built environment. Adoption of this standard is to safeguard the environment, public health, safety and general welfare through the establishment of requirements to reduce the negative potential impacts and increase the potential positive impacts of the built environment and building occupants, by means of minimum requirements to: conservation of natural resources, materials and energy; the employment of renewable energy technologies, indoor and outdoor air quality; and building operations and maintenance. (XX) 101.3 Requirements. The design of buildings shall be in accordance with the International Green Construction Code (IGCC). Add the Following to Chapter 35 – references: ICC International Code Council, Inc.

	500 New Jersey Avenue, NW 6th Floor Washington, DC 20001 Standard Referenced: IGCC Title: International Green Construction Code (IGCC) Reference in code section number: Appendix L
Rational	1. The purpose of this proposed change is to add a new optional appendix to the FBC. 2. The proposed appendix will reference the International Green Construction Code (IGCC). This newly-developed, consensus-based standard may be used in conjunction with local code requirements specific to green buildings covered in the scope. 3. Green buildings are currently being designed and constructed nationwide using different programs guidelines, rating systems, and standards. The IGCC was developed under the direction of ICC, in conjunction with representatives from other nationally-recognized organizations with experience and expertise in this field, including ASHRAE members. In many cases, limited guidance is given as to the criteria to be used to determine if the building project meets the expectations. The IGCC provides a path using a publicly-reviewed resource for local jurisdictions to adopt and use in the administration of green residential building design.
Fiscal Impact statement	
Impact to Local Enforcement	This proposed change does not impact local enforcement, it merely provides an alternate path for design that adhere to the Florida Building Code
Impact to Building owner	No fiscal impact to the building owner is anticipated
Impact to Industry	No fiscal impact to the industry is anticipated
Requirements	
Has connection to health safety and Welfare	This proposed change protects the health, safety and welfare by allowing the code compliant use of “green” ideas and technologies
Strengths or improves Code	This proposed change improves the code for design consistency
Does not discriminate	This proposed change does not discriminate
Does not degrade effectiveness of code	This proposed change does not degrade the effectiveness of the code.

Sub Code: Residential

Date Submitted	4/1/2010	**Section**	903.2.2	**Proponent**	Chuck Anderson
Chapter	9	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation No Affirmative Recommendation with a Second

Commission Action Pending Review

Related Modifications

4334

Summary of Modification

Clarifies that skylights are to be installed and flashed in accordance with manufacturers instructions; provides an exception to requirement for crickets

Rationale

Eliminates confusion as to whether a cricket needs constructed.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

clarifies when crickets are not required

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

Requirements

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

requires proper installation as intended by the manufacturer.

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

clarifies use of crickets

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

clarifies

Alternate Language

2nd Comment Period 09/03/2010 - 10/18/2010

R4335-A2

Proponent Dwight Wilkes **Submitted** 10/18/2010 **Attachments** Yes

Rationale

For consistency within the code and the fact that the Modifications #4264, 4332 and 4336 have been approved this Mod should be reconsidered.

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

Lessens cost of trying to determine how to build a "cricket or saddle" as the flashing is provided by the unit skylight manufacturer.

Requirements

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

complies

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

Improves the flashing of a "UNIT" skylight and does not rely upon the vague undefined phrase, "cricket or saddle" for unit skylights.

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

complies

Does not degrade the effectiveness of the code

Improves

R903.2.2 Crickets or saddles. A cricket or saddle shall be installed on the ridge side of any chimney or penetration greater than 30 inches (762 mm) wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.

Exception: 1. Any penetration that allows water to flow around it shall not require a cricket or saddle.

2. Skylights installed and flashed in accordance with manufacturer's instructions

R903.2.2 Crickets and saddles. A cricket or saddle shall be installed on the ridge side of any chimney or penetration more than 30 inches (762 mm) wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.

Exception: Unit skylights installed in accordance with section R308.6 and flashed in accordance with the manufacturer's instructions shall be permitted to be installed without a cricket or saddle.

R903.2.2 Crickets and saddles. A cricket or saddle shall be installed on the ridge side of any chimney greater than 30 inches (762mm) wide. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.

Exception: Unit skylights installed in accordance with section R308.6 and flashed in accordance with the manufacturer's instructions shall be permitted to be installed without a cricket or saddle.

R903.2.2 Crickets or saddles. A cricket or saddle shall be installed on the ridge side of any chimney or penetration greater than 30 inches (762 mm)
wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.
Exception: 1. Any penetration that allows water to flow around it shall not require a cricket or saddle.
2. Skylights installed and flashed in accordance with manufacturer's instructions

R4202

Date Submitted	3/31/2010	**Section**	R905	**Proponent**	T Stafford
Chapter	9	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation No Affirmative Recommendation with a Second
Commission Action Pending Review

Related Modifications

See modification to Section 1507, mod 4201 in the FBC, Building.

Summary of Modification

This proposal specifies methods for a secondary water barrier under roof coverings for new construction.

Rationale

This proposal specifies methods for a secondary water barrier under roof coverings for new construction that is similar to Section 611.7.2 in the 2007 FBCEB which applies to SWB's for re-roofing applications on site-built single family residential structures. See attached supporting documentation.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This modification will have a negligible impact to local entities regarding enforcement of the code since the modification requires the use of materials that are already required by the code.

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

This modification will increase the cost to building and property owners relative to compliance with the code.

Impact to industry relative to the cost of compliance with code

This modification will increase the cost to the industry relative to compliance with the code.

Requirements

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

This modification is directly related to the health, safety and welfare of the general public by improving the building's resistance to water penetration in the event the primary roof covering is lost in a hurricane.

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

This proposal strengthens the code by requiring a secondary level of water protection for the building in the event the primary roof covering is lost during a hurricane.

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

This modification doesn't discriminate against any materials, products, methods, or systems as multiple options are permitted to achieve the level of protection desire.

Does not degrade the effectiveness of the code

This proposal strengthens the code by requiring a secondary level of water protection for the building in the event the primary roof covering is lost during a hurricane.

2nd Comment Period 09/03/2010 - 10/18/2010

Proponent T Stafford **Submitted** 10/18/2010 **Attachments** No

R4202-G2

Comment:

This modification was not approved because these provisions are not in the 2009 IRC. However, a very similar version has been approved for the 2012 IRC which will be printed and available around May 2011 and subsequently adopted in some jurisdictions shortly after its availability. Just because it's not in the 2009 IRC is not a very good reason for not approving new code language. This new language will significantly improve the resistance of buildings to water damage in the event the roof covering is lost. The State of Florida has generally been a leader when it comes to design of buildings for hurricanes. When this proposal was approved at the ICC hearings, it had the support of ARMA and NAHB. It only applies where the basic wind speed is greater than 120 mph and reflects a compromise on methods for establishing a secondary water barrier for buildings. This modification represents a positive step forward to providing additional resistance to water damage from hurricanes for the citizens of Florida.

1st Comment Period History 04/15/2010 - 06/01/2010

Proponent Jack Glenn **Submitted** 5/31/2010 **Attachments** No

R4202-G1

Comment:

This change is more appropriate for the base code and If te ICC has approved this language for thre 2012 code Florida can address it in the next code cycle. The proponent has not demonstrated a "Florida-Specific Need" as required by part "G" of the standing motion for approval. Evidence from resent tropical storms in Florida would indicate the current code requirementrs appear to be working. The requirement in the Existing Code Volume were added to "harden" the existing housing stock.

1.

R905.2.7.2 Underlayment and high wind. Underlayment installed where the basic wind speed equals or exceeds 120 mph shall comply with ASTM D 226 Type II, ASTM D 4869 Type IV, or ASTM D 6757. The underlayment shall be attached in a grid pattern of 12 inches between side laps with a 6 inch spacing at the side laps. Underlayment shall be applied in accordance with Section R905.2.7 except all laps shall be a minimum of 4 inches. Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inches (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge (0.105 inches) with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

2. Revise as follows:

R905.3.3.3 Underlayment and high wind. Underlayment installed where the basic wind speed equals or exceeds 120 mph shall be attached in a grid pattern of 12 inches between side laps with a 6 inch spacing at the side laps. Underlayment shall be applied in accordance with Section R905.3.3 except all laps shall be a minimum of 4 inches. Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inches (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge (0.105 inches) with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

3. Add new text as follows:

R905.4.3.2 Underlayment and high wind. Underlayment installed where the basic wind speed equals or exceeds 110 mph shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914mm)on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph shall comply with ASTM D 226 Type II, ASTM D 4869 Type IV, or ASTM D 1970. The underlayment shall be attached in a grid pattern of 12 inches between side laps with a 6 inch spacing at the side laps. Underlayment shall be applied in accordance with Section R905.4.3 except all laps shall be a minimum of 4 inches. Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inches (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge (0.105 inches) with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

4. Add new text as follows:

R905.5.3.2 Underlayment and high wind. Underlayment installed where the basic wind speed equals or exceeds 110 mph shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914mm)on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches between side laps with a 6 inch spacing at the side laps. Underlayment shall be applied in accordance with the manufacturer's installation instructions except all laps shall be a minimum of 4 inches. Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inch (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge (0.105 inches) with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

5. Add new text as follows:

R905.6.3.2 Underlayment and high wind. Underlayment installed where the basic wind speed equals or exceeds 110 mph shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914mm)on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches between side laps with a 6 inch spacing at the side laps. Underlayment shall be applied in accordance with Section R905.6.3 except all laps shall be a minimum of 4 inches. Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inches (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge (0.105 inches) with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

6. Add new text as follows:

R905.7.3.2 Underlayment and high wind. Underlayment installed where the basic wind speed equals or exceeds 110 mph shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914mm)on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches between side laps with a 6 inch spacing at the side laps. Underlayment shall be applied in accordance with Section R905.7.3 except all laps shall be a minimum of 4 inches. Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inches (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge (0.105 inches) with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

7. Add new text as follows:

R905.8.3.2 Underlayment and high wind. Underlayment installed where the basic wind speed equals or exceeds 110 mph shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914mm)on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph shall comply with ASTM D 226 Type II or ASTM D 4869 Type IV. The underlayment shall be attached in a grid pattern of 12 inches between side laps with a 6 inch spacing at the side laps. Underlayment shall be applied in accordance with Section R905.2.7 except all laps shall be a minimum of 4 inches. Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inches (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge (0.105 inches) with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

8. Add new text as follows:

R905.10.2.1.1 Underlayment and high wind. Underlayment installed where the basic wind speed equals or exceeds 110 mph shall be applied with corrosion-resistant fasteners in accordance with manufacturer's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914mm) on center.

Underlayment installed where the basic wind speed equals or exceeds 120 mph shall comply with ASTM D 226 Type II. The underlayment shall be attached in a grid pattern of 12 inches between side laps with a 6 inch spacing at the side laps. Underlayment shall be applied in accordance with Section R905.10.2.1 except all laps shall be a minimum of 4 inches. Underlayment shall be attached using metal or plastic cap nails with a head diameter of not less than 1 inches (25.4 mm) with a thickness of at least 32 gauge sheet metal. The cap nail shank shall be a minimum of 12 gauge (0.105 inches) with a length to penetrate through the roof sheathing or a minimum of ¾ inch into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D 1970 shall be permitted.

Reason: This proposal sets requirements for a SWB that is similar to Section 611.7.2 in the 2007 FBCEB which applies to SWB's for re-roofing applications on site-built single family residential structures. The goal is to provide a secondary level of water protection to the building in the event the primary roof covering is lost due to a wind event. Observations of roof underlayment performance following Hurricane Ike in Texas and in two sets of tests conducted at the University of Florida and Florida International University demonstrated that relatively new and new ASTM 226 Type I underlayments performed very poorly when subjected to wind over about 110 mph. In the laboratory tests, specimen covered with ASTM 226 Type I and Type II underlayments performed dramatically differently. ASTM Type I felt (15#) material completely blew off some portions of the specimen as winds exceeded 110 mph and pulled over the plastic caps on other parts of the specimen. In contrast, the ASTM 226 Type II (30#) material remained in place and showed very few signs of distress.

A very similar proposal to the 2012 IRC was approved by the IRC Code Development Committee at the ICC Code Development hearings in Baltimore. This proposal is also similar to Section 611.7.2 in the FBCEB which applies to SWB's for re-roofing applications on site-built single family residential structures.

R4228

Date Submitted	4/1/2010	**Section**	R905	**Proponent**	T Stafford
Chapter	9	**Affects HVHZ**	No	**Attachments**	Yes

TAC Recommendation No Affirmative Recommendation with a Second
Commission Action Pending Review

Related Modifications

See modifications to Sections R202, R301, R401, R404, R502, R602, R603, R606, R607, R608, R609, R611, R703, R802, R803, R804, R4301, R4403 in the Florida Building Code, Residential

Summary of Modification

This modification is a correlation to the modification that updates ASCE 7 to the 2010 Edition.

Rationale

This modification is a correlation to the modification that updates ASCE 7 to the 2010 Edition and introduces an ultimate wind speed map. See attached supporting documentation.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This modification will impact local entities. Code officials will have to become familiar with a new wind speed map and new version of ASCE 7 that contains many new changes.

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

Design wind loads will generally decrease but not in all areas. The wind-borne debris region is expanded in some areas and reduced in others. Some building and property owners will see a decrease in cost of compliance with the code, some will see no change, and others may see an increase.

Impact to industry relative to the cost of compliance with code

Design wind loads will generally decrease but not in all areas. The wind-borne debris region is expanded in some areas and reduced in others. Some in the industry will see a decrease in cost of compliance with the code, some will see no change, and others may see an increase.

Requirements

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

This modification incorporates the latest knowledge and research on the determination of design wind loads on buildings and structures through the update to the 2010 Edition of ASCE 7.

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

This modification strengthens the code by updating to the latest edition of the standard that has been the basis for the determination of wind loads on buildings and structures since the inception of the Florida Building Code.

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

The proposed language is performance based and therefore does not discriminate against any other material, product, method, or system of construction.

Does not degrade the effectiveness of the code

The modification does not degrade the effectiveness of the code. The effectiveness of the code is enhanced by adopting the latest methods and design procedures for designing buildings for wind loads as given in ASCE 7-10.

2nd Comment Period 09/03/2010 - 10/18/2010

Proponent T Stafford **Submitted** 10/18/2010 **Attachments** No

R4228-G1

Comment:

This proposed code change should be approved for consistency with the Structural TAC action on the update to ASCE 7-10. The Structural TAC approved the proposal that updates the wind provisions and correlating code requirements to the 2010 edition of ASCE 7. This modification is necessary for coordination with ASCE 7-10.

30.

Table R905.2.6.1

Wind Resistance of Asphalt Shingles

Maximum V_{asd} **as determined in accordance with Section R301.2.1.3** ~~Basic Wind Speed MPH (per Figure R301.2 (4)~~	Classification
100	ASTM D3161Class D or ASTM D 7158 Class G or TAS 107
110	ASTM D3161Class F or ASTM D 7158 Class G or TAS 107
120	ASTM D3161Class F or ASTM D 7158 Class G or TAS 107
130	ASTM D3161Class F or ASTM D 7158 Class H or TAS 107
140	ASTM D3161Class F or ASTM D 7158 Class H or TAS 107
150	ASTM D3161Class F or ASTM D 7158 Class H or TAS 107

31.

R905.2.8.5 Drip edge. Provide drip edge at eaves and gables of shingle roofs. Overlap to be a minimum of 3 inches (76 mm). Eave drip edges shall extend ½ inch (13 mm) below sheathing and extend back on the roof a minimum of 2 inches (51 mm). Drip edge at eaves shall be permitted to be installed either over or under the underlayment. If installed over the underlayment, there shall be a minimum 4 inch (51 mm) width of roof cement installed over the drip edge flange. Drip edge shall be mechanically fastened a maximum of 12 inches (305 mm) on center. Where the V_{asd} as determined in accordance with Section R301.2.1.3 ~~basic wind speed per Figure R301.2(4)~~ 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.

32.

R905.7.5 Attachment. Attachment in accordance with Table R905.7.5 shall be used for roofs with a mean roof height of 40 feet or less and in regions with a V_{asd} as determined in accordance with Section R301.2.1.3 ~~basic wind speed~~ of 100 mph or less.

33.

R905.7.6 Attachment for V_{asd} as determined in accordance with Section R301.2.1.3 ~~wind speed~~ greater than 100 mph. Wood shingles installed in accordance with Table R905.7.5 and the requirements of R905.7.6 has an allowable uplift resistance of 45 psf. The installation of wood shingles shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2).

34.

R905.8.7 Attachment for V_{asd} as determined in accordance with Section R301.2.1.3 ~~wind speed~~ greater than 100 mph. Wood shakes installed in accordance with Table R905.7.5 and the requirements of R905.8.7 have an allowable uplift resistance of 90 psf. The installation of wood shakes shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2)

Reason: The purpose of this proposal is to update and coordinate the provisions of the 2010 Florida Building Code, Residential (FBCR) with those of the 2010 edition of ASCE 7 for the determination of wind loads. Although overall consisting of many small parts, the underlying reason for this change is to adopt into the 2010 FBCR the new wind speed maps that have been adopted into ASCE 7.

Over the past 10 years, new data and research has been performed that indicates that the hurricane wind speeds provided in the current maps of the FBCR and ASCE-05 (ASCE 7-02 and ASCE 7-98 as well) are too conservative and need to be adjusted downward. Significantly more hurricane data have become available thereby allowing for substantial improvements in the hurricane simulation model that is used to create the wind speed maps. These new data have resulted in an improved representation of the hurricane wind field, including the modeling of the sea-land transition and the hurricane boundary layer height; new models for hurricane weakening after landfall; and an improved statistical model for the Holland B parameter which controls the wind pressure relationship. The new hurricane hazard model yields hurricane wind speeds that are generally lower than those given in ASCE 7-05 and 2007 FBCR even though the overall rate of intense storms (as defined by central pressure) produced by the new model is increased compared to those produced by the hurricane simulation model used to develop previous maps.

In preparing the new maps, the ASCE 7 standards committee decided to use multiple ultimate event or strength design maps in conjunction with a wind load factor of 1.0 for strength design - for allowable stress design, the factor was reduced from 1.0 to 0.6. Several factors that are important to an accurate wind load standard led to this decision:

(i) An ultimate event or strength design wind speed map makes the overall approach consistent with that used in seismic design in that they both map ultimate events and use a load factor of 1.0 for strength design.

(ii) Utilizing different maps for the different Risk Categories eliminates the problems associated with using "importance factors" that vary with category. The difference in the importance factors in hurricane prone and non-hurricane prone regions for Category I structures prompted many questions and have been removed from ASCE 7-10.

(iii) The use of multiple maps eliminates the confusion associated with the recurrence interval associated with the existing map - the map was not a uniform fifty year return period map. This therefore created a situation where the level of safety provided for within the overall design was not consistent along the hurricane coast.

Utilizing the new wind speed maps and integrating their use into the FBCR necessitated the introduction of the terms Vult and Vasd to be associated with the "ultimate" design wind speed and the "nominal" design wind speed respectively. Because of the number of different provisions which use the wind speed map to "trigger" different requirements it was necessary to modify the conversion section (R301.2.1.3) so that those provisions were not changed. The terms "ultimate design wind speed" and "nominal design wind speed" were incorporate in numerous locations to aid in drawing the users attention to the different types of wind speeds - similar to what was done with the change from fastest mile to 3-second gust wind speeds.

Beyond the adoption of the new strength design wind speed maps, the 2010 edition of ASCE 7 also includes a new simplified method for use in the determination of wind loads for buildings up to 160' in height. In addition, the wind load calculation provisions have been removed from Chapter 6 of ASCE 7 and been reorganized into 6 separate chapters (26 thru 31) for the sake of clarity and ease of use. This of course necessitated multiple coordination revisions with the FBCR text. Additionally, Exposure Category D is reintroduced for water surfaces in hurricane-prone regions.

ASCE/SEI 7 has been a referenced standard of the FBCR since its inception and as such it is well known to the building community. ASCE/SEI 7 is published and maintained by the Structural Engineering Institute of the American Society of Civil Engineers (SEI/ASCE). The document is a nationally recognized consensus standard developed in full compliance with the ASCE Rules for Standards Committees. The ASCE standards process is fully accredited by the American National Standards Institute (ANSI).

As of the submission date of this code change, the 2010 edition of ASCE/SEI 7 is in the process of being printed. The document is designated ASCE/SEI 7-10 Minimum Design Loads for Buildings and Other Structures and it is expected that it will be completed and available for purchase in May of 2010 .

Sub Code: Test Protocols

Date Submitted	3/16/2010	**Section**	1.01 A	**Proponent**	Jaime Gascon
Chapter	1	**Affects HVHZ**	Yes	**Attachments**	Yes

TAC Recommendation No Affirmative Recommendation with a Second

Commission Action Pending Review

Related Modifications

Summary of Modification

This modification provides additional clarification on tile installation procedures for adhered systems.

Rationale

This modification provides additional clarification on tile installation procedures for adhered systems. It puts the code in line with good roofing practices.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. This modification adds additional clarity to the tile installation procedure, and provides for a quality installation.

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

None, but it serves to provide for a better installation.

Impact to industry relative to the cost of compliance with code

The modification is in line with good roofing practices, and will minimize repairs due to lack of adhesion caused by contaminants/debris.

Requirements

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

This modification ensures proper preparation practice before installing the tile.

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

This modification ensures proper preparation practice before installing the tile.

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

None.

Does not degrade the effectiveness of the code

It improves the code by referencing/using sound roofing practices.

Alternate Language

2nd Comment Period 09/03/2010 - 10/18/2010

R3531-A1

Proponent Alex Tigera **Submitted** 10/18/2010 **Attachments** Yes

Rationale

This modification provides additional clarification on tile installation procedures for adhered systems. It puts the code in line with good roofing practice.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. This modification adds additional clarity to the tile installation procedure, and provides for a quality installation.

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

None, but it serves to provide for a better installation.

Impact to industry relative to the cost of compliance with code

Ths modification is in line with good roofing practices, and will minimize repairs due to lack of adhesion caused by contaminants/debris/solvents.

Requirements

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

This modification ensures proper preparation practice before installing the tile.

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

This modification ensures proper preparation practice before installing the tile.

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

None.

Does not degrade the effectiveness of the code

It improves the code by referencing/using sound roofing practices.

A. Tiles shall be free of debris and not be installed over wet underlayment where moisture or debris on tile prohibits adhesion of mastic, mortar, or adhesive.

1.01

A. Tiles shall not be installed over wet underlayment where moisture prohibits adhesion of mastic, mortar, or adhesive.

B. Tiles shall be free of loose debris and clean of any solvents or contaminants that may prohibit adhesion of mastic, mortar, or adhesive.

R3532

Date Submitted	3/16/2010	**Section**	Appendix D Section 5.5	**Proponent**	Jaime Gascon
Chapter	1	**Affects HVHZ**	Yes	**Attachments**	Yes

TAC Recommendation No Affirmative Recommendation with a Second
Commission Action Pending Review

Related Modifications

Summary of Modification

This modification adds clarification as to the number of test specimens required for this test standard.

Rationale

This modification provides guidance on the amount of test specimens required by this test protocol. The number of test specimens is missing from the standard. Three test specimens have always been tested for this standard.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This modification does not impact any local entity relative to enforcement of code. It provides guidance on the amount of test specimens required when performing this test.

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

This modification does not impact building or property owners relative to cost of compliance with the code. It provides guidance on the amount of test specimens required when performing this test.

Impact to industry relative to the cost of compliance with code

This modification provides guidance on the amount of test specimens required when performing this test. Three specimens are currently being tested, therefore there would not be a difference in cost impact due to this modification.

Requirements

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

None, but provides a higher level of confidence.

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

This code modification provides clear guidance as to how many test specimens are required for this test protocol.

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

No discrimination since products being tested to this standard have been testing three specimens.

Does not degrade the effectiveness of the code

It improves the code by correlating the standard to how the testing is actually being performed. It also provides clarity to manufacturers and labs when performing this test.

Alternate Language

2nd Comment Period 09/03/2010 - 10/18/2010

R3532-A1

Proponent	Alex Tigera	**Submitted**	10/18/2010	**Attachments**	Yes

Rationale

This modification provides quidance on the amount of test specimens requires by this test protocol. The number of test specimens is missing from the standard. Three test specimens have always been tested for this standard. The new language in turn affect section 7 of this standard and clarifies the interpretation of the results. This is the same language used in other test standards in the Test Protocols.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This modification does not impact any local entity relative to enforcement of code. It provides guidance on the amount of test specimens required when performing this test. Additionally it provides clear guidance on interpretation of the results.

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

This modification does not impact building or property owners relative to cost of compliance with the code. It provides guidance on the amount of test specimens required when performing this test. Additionally it provides clear guidance on interpretation of the results.

Impact to industry relative to the cost of compliance with code

This modification provides guidance on the amount of test specimens required when performing this test. Three specimens are currently being tested, therfore there would not be a difference in cost impact due to this modification.

Requirements

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

None, it provides a higher level of confidence.

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

This code modification provides clear guidance as to how many test specimens are required for this test protocol.

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

No discrimination since products being tested to this standard have been testing three specimens.

Does not degrade the effectiveness of the code

It improves the code by correlating the standard to how the testing is actually being performed. It also provides clarity to manufacturers and labs when performing this test.

5. Test Specimens:

5.1 The components for a proposed test panel are assembled to the desired specifications and details (gauge of steel, application method and rate for the adhesives, size and thickness of insulation, type of cover) and then left to "cure" for a specified time period.

5.2 The test specimen shall be tested to 30 psf (1.4 kPa) after a 4 day laboratory cure time at ambient conditions. If the test specimen fails to resist this initial test pressure, the test shall be discontinued. On passing this initial testing, the test specimen shall be allowed to cure for the remaining cure time.

5.3 If insulation panels for part of the test specimen, a panels shall be installed such that a three way joint is located in the center of the test specimen. If more than one layer of insulation forms part of the test specimen, the top layer shall employ the three way joint.

5.4 Roof system assemblies whose wind-load resistance performance may be affected by bad weather conditions during installation shall be constructed in a manner which simulates actual working conditions.

5.5 Not less than three specimens shall be constructed for each roof system assembly being tested.

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6. Test Procedure:

6.1 Principal

6.1.1 The test apparatus is secured to the roof system assembly test specimen which is cut around the perimeter of the test apparatus. Thereafter, an uplift load is applied to the test apparatus which distributes the load over its area. The distributed load is transferred to the test specimen. Subsequent increasing uplift loads are applied until failure occurs.

6.2 Once the test specimen has cured and the test apparatus is secured, uplift loads are applied through the test apparatus in accordance with Table D1, below:

6.3 Prior to and during the attainment of the uplift pressures noted above, the test specimen is examined for failure. On failure, the test specimen is dismantled and examined to determine the exact mode of failure.

6.4 Record the mode, time, and pressure interval of failure.

7. Interpretation of Results:

7.1 ~~The passing uplift pressure shall be the pressure which the test specimen resisted for one minute without failure.~~ The passing uplift pressure shall be the average of the three pressures which the test specimens resisted for one minute without failure. If one or more of the three tests yields a passing uplift pressure greater or less than 15 percent of other recorded values, an additional test shall be conducted.

7.2 The minimum passing uplift pressure for an approved roof system assembly shall be 90 psf (4.2 kPa).

7.3 A 2:1 margin of safety shall be applied to the passing uplift pressure prior to inclusion in the system manufacturer's Product Approval.

7.4 Average wind velocities can vary considerably from area to area. The Florida Building Code, Building utilizes a windspeed as noted in section 1620.2. These wind velocities in miles per hour are related to the design pressure, in pounds per square feet (kg/m2), for a particular building. Refer to Chapter 16 (High-Velocity Hurricane Zones) of the Florida Building Code, Building and ASCE 7.

7.5 No extrapolation of resulting data will be accepted.

Sub Code: Residential

R4250

Date Submitted	4/1/2010	**Section**	R905.3	**Proponent**	Pate Lisa
Chapter	43	**Affects HVHZ**	No	**Attachments**	No

TAC Recommendation Withdrawn
Commission Action Pending Review

Related Modifications

Summary of Modification

Inserting correct edition of standard reference document.

Rationale

A newer edition of the FRSA/TRI 07320 Concrete and Tile Roof Tile Installation manual is available.

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.

Requirements

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

No connection.

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

Strengthens and improves the code. Clarifies which roofing systems may be used together.

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.

2nd Comment Period 09/03/2010 - 10/18/2010

Proponent roger held **Submitted** 10/11/2010 **Attachments** No

Comment:

CDC Comment: AS

R4250-G1

FRSA/TRI 07320/~~8-05~~ 4-10

Concrete and Clay Roof Tile Installation Manual, ~~Fourth Edition~~ Fifth Edition.