

Structural

Proposed Code Modifications

2013 Florida Building Code - Full Report

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TAC: Structural

Sub Code: Building

Total Mods for Structural: 85

S5190

Date Submitted	7/16/2012	**Section**	202	**Proponent**	Joe Bigelow
Chapter	2	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Rationale

To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Currently used under the 2010 Code, no new requirements being established

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

Currently used under the 2010 Code, no new requirements being established

Impact to industry relative to the cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Requirements

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

Does not degrade the effectiveness of the code

Carried over from the previous, field tested and proven to be effective

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5190 Text Modification

Add to read as shown.

DECORATIVE CEMENTITIOUS COATING. A skim coat, as defined in ASTM C 926, of portland cement based plaster applied to concrete or masonry surfaces intended for cosmetic purposes.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5190_TextOfModification_1.png

Date Submitted	7/24/2012	**Section**	202	**Proponent**	Dwight Wilkes
Chapter	2	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Reason: The overall intent of this proposal is to clarify the requirements for tubular daylighting devices, within the context of skylights and sloped glazing.

Rationale

Reason: The overall intent of this proposal is to clarify the requirements for tubular daylighting devices, within the context of skylights and sloped glazing.

Tubular daylighting devices are a type of skylights, just as unit skylights and clarifies that, like unit skylights, TDDs are a type of skylight. This change would also bring consistency to the definition of skylights and sloped glazing.

This is the first of three modifications, second to chapter 17 and third to chapter 24.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions will be part of the Florida Base Code Code and adds clarity to the requirements for tubular daylighting devices within the context of skylights and sloped glazing.

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

The code change proposal will not increase the cost of construction.

Impact to industry relative to the cost of compliance with code

The code change proposal will not increase the cost of construction.

Requirements

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

Helps protect the health and welfare of the public by having the wind provisions for these products

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

These changes bring clarity to the code that these products are tested and labeled.

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

These modifications do not discriminate as it allows the use of any product that shows proof of meeting the code established standards.

Does not degrade the effectiveness of the code

The overall intent of this proposal is to clarify the requirements for tubular daylighting devices, within the context of skylights and sloped glazing.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

General Comment - 08/09/2012 - 09/23/2012

S5633-G1

Proponent BOAF CDC **Submitted** 9/23/2012 **Attachments** No

Comment:

This has been submitted to the ICC change S176 -12 and would add tubular skylights to the definition. BOAF supports this change.

S5633 Text Modification

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SECTION 202

DEFINITIONS

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

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5633_TextOfModification_1.png

S5633 Text Modification

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S176-12

Errata: Revise as follows:

2405.5 Unit skylights and tubular daylighting devices. Unit skylights and tubular daylighting devices shall be tested and labeled as complying with AAMA/WDMA/CSA 101/I.S./A440. The *label* shall state the name of the manufacturer, the *approved* labeling agency, the product designation and the performance grade rating as specified in AAMA/WDMA/CSA 101/I.S.2/A440. If the product manufacturer has chosen to have the performance grade of the skylight rated separately for positive and negative design pressure, then the *label* shall state both performance grade ratings as specified in AAMA/ WDMA/CSA 101/I.S.2/A440 and the skylight shall comply with Section 2405.5.2. If the skylight is not rated separately for positive and negative pressure, then the performance grade rating shown on the *label* shall be the performance grade rating determined in accordance with AAMA/WDMA/ CSA 101/I.S.2/A440 for both positive and negative design pressure and the skylight shall conform to Section 2405.5.1.

(Portions of code change not shown remain unchanged)

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Committee Action: **Approved as Modified**

Modify proposal as follows:

2404.2 Sloped glass. Glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunrooms, sloped roofs and other exterior applications shall be designed to resist the most critical of the following combinations of loads.

Exception: The ~~design pressure~~ performance grade rating of unit skylights and tubular daylighting devices shall be determined in accordance with Section 2405.5.

(Portions of section not shown remain unchanged)

(Portions of proposal not shown are unchanged)

Committee Reason: This code change makes requirements applicable to tubular daylighting devices and this proposal is preferred over S301-12. The modification substitutes performance grade in the exception for consistency with Section 2404.5.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5633_Text_S176-12 Unit Skylights and TDD ICC Report of Public Hearing_1.png

Date Submitted	7/28/2012	**Section**	202	**Proponent**	Joseph Belcher
Chapter	2	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

2002 Definition is companion to proposed changes to 2002 and other sections of the code.

Summary of Modification

Brings forward definition of screen enclosure.

Rationale

The base code does not address this unique structure so commonly found in Florida.The State of Florida has been referred to as the birthplace of the screen enclosure as we know it. The industry began in Florida and is slowly spreading to other states with temperate climates. The provisions have been rejected by the ICC code change committee in the past.

Screen enclosures are intended to be a relatively inexpensive means for Florida residents to add a space to their home allowing them to enjoy the outdoors while keeping insects, the sun, and vermin at bay. When enclosing a swimming pool they also act to reduce the required amount of chemicals necessary to maintain swimming pool water. Application of the same requirements which must be met for the habitable structure, such as the energy code, electrical receptacles, and others raises the costs to the point of prohibiting such construction. These provisions have been in the FBC for a number of years and have proven to be effective.
The current definition is modified to include the enclosure of patio and deck areas under a structure's roof. This was the original intent as is evidenced by the language at 1609.1.2 addressing the construction of " sunrooms, balconies or enclosed porches constructed under existing roofs or decks".

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity relative to enforcement of code as the provisions for screen enclosures have been in the code since the first edition with the AAMA Categories added in the 2007 Edition. The modification addressing the roof of the structure will have no cost impact on enforcement.

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

No impact to building and property owners as the provisions for screen enclosures have been in the code since the first edition with the AAMA Categories added in the 2007 Edition. The modification addressing the roof of the structure will have no cost impact and will benefit Florida citizens.

Impact to industry relative to the cost of compliance with code

No impact to industry as the provisions for screen enclosures have been in the code since the first edition with the AAMA Categories added in the 2007 Edition. The modification addressing the roof of the structure will have no cost impact and will benefit the industry by clarifying the intent.

Requirements

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

Bringing the provisions forward will allow the continued construction of structures attached to dwellings allowing Florida residents to enjoy the climate without insects and vermin amd will benefit the citizens of Florida

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

Bringing the provisions forward will improve the code by specifically addressing a type construction not adequately addressed by the base code.

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

The proposed amendment does not discriminate and has eliminated discrimination from officials publicly stating they do not “like” these structures.

Does not degrade the effectiveness of the code

Improves the effectiveness of the code by providing requirements for a common type of Florida construction which is not addressed by the base code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

S5726 Text Modification

SCREEN ENCLOSURE. A building or part thereof, in whole or in part self-supporting, and having walls of insect screening with or without removable vinyl or acrylic wind break panels and a roof of insect screening, plastic, aluminum or similar lightweight material, or other materials and assemblies such as a patio or deck roof of a structure.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5726_TextOfModification_1.png

The State of Florida has been called the birthplace of the screen enclosure as we know it. While the provisions for screen enclosures have not been approved by the ICC, they were submitted in the past. The base code does not address these structures found throughout Florida. Florida's climate is conducive to outdoor activities; however, the insects make enjoyment of the outdoors difficult. Screen enclosures serve the purpose of permitting citizens to enjoy the outdoors without the pests. The amount of screen enclosures constructed in Florida merits they be addressed in the code.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5726_PQ2_ScreenEnc_Def_Geo_Data_IBC_IRC_1.png

S5726 Prior Code Version question. submitted or attempted to be included

Page: 1

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

The provisions were submitted in the past and rejected in the International Building Code. A number of the provisions have been adopted as an appendix in the International Residential Code Appendix H. The Commission does not adopt appendices.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5726_PQ3_ScreenEnc_Submitted_IBC_IRC_1.png

Date Submitted	7/28/2012	**Section**	202	**Proponent**	Joseph Belcher
Chapter	2	**Affects HVHZ**	No	**Attachments**	Yes

General Comments No

Alternate Language No

Related Modifications

2002 Definition is companion to proposed changes to 2002 and other sections of the code.

Summary of Modification

Brings forward definition of screen enclosure.

Rationale

The base code definition does not address the most commonly built sunroom in Florida.The addition to the definition has been in the FBC for a number of editions are field tested and proven to be beneficial to the citizens of Florida.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity relative to enforcement of code as the definition has been in the code since the 2004 Edition and are field tested and proven to be beneficial to enforcement.

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

No impact to building and property owners as the definition has been in the code since the 2004 Edition and are field tested and proven to be beneficial to Florida citizens.

Impact to industry relative to the cost of compliance with code

No impact to industry as the definition has been in the code since the 2004 Edition and are field tested and proven to be beneficial to Florida citizens and the industry. The mod was originally proposed by the industry.

Requirements

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

Bringing the definition forward affects the welfare of the general public by including the definition of the most common type sunroom structures built in Florida which will benefit the citizens of Florida.

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

Bringing the definition forward improves the code by including the definition of the most common type sunroom structures built in Florida which will benefit the citizens of Florida.

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

The proposed amendment does not discriminate.

Does not degrade the effectiveness of the code

Improves the effectiveness of the code by including the most common type of sunroom built in Florida in the definition for sunroom.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

The definition contained in the base code does not include the sunroom most commonly built in Florida. The added definition was originally derived from the ICBO code.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

SUNROOM.

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

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

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5727_TextOfModification_1.png

S5727 Prior Code Version question. Evidence or Data

The base code definition does not address the sunroom most commonly built in throughout Florida. The modified definition has been in the last three editions of the FBC and elimination of it would have a severely negative impact on the industry. The climate of Florida is not conducive to glass roofs on sunrooms.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5727_PQ2_Sunroom_Def_Geo_Data_IBC_IRC_1.png

S5727 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5727_PQ3_Sunroom_Def_Submitted_IBC_IRC_1.png

Date Submitted	7/31/2012	**Section**	202	**Proponent**	Joseph Belcher
Chapter	2	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

3105

Summary of Modification

Retains definition of awning as companion to Mod 5932

Rationale

Retains portions of FBC definition of awning as companion to changes to Section 3105.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity relative to enforcement of the code as the provisions have been in the code since FBC 2004.

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

No impact to owners relative to complliance with the code as the provisions have been in the code since FBC 2004.

Impact to industry relative to the cost of compliance with code

No impact to owners relative to complliance with the code as the provisions have been in the code since FBC 2004.

Requirements

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

Retains definition of awning as companion to changes to Section 3105.

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

Retains definition of awning as companion to changes to Section 3105.

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

The proposed amendment does not discriminate.

Does not degrade the effectiveness of the code

Retains definition of awning as companion to changes to Section 3105.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5936 Text Modification

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

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5936_TextOfModification_1.png

Originally, the provisions were adapted from the South Florida Building Code and placed in the 2004 FBC because the base code did not address this type of construction in a meaningful manner. Many problems were encountered in the field and at the time the Commission received numerous requests for Declaratory Statements on issues related to awnings and canopies. It was determined the FBC had no clear cut provisions relating to these structures and the provisions above were submitted. Once in the code the problems were resolved.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5936_PQ2_Evidence_Data_s.3105_1.png

Date Submitted	7/3/2012	**Section**	1401.1	**Proponent**	Michael Goolsby
Chapter	14	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Delete HVHZ Sections

Rationale

Elimination of reference to remaining HVHZ sections; the sections are being deleted by a separate modification.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions are now utilized, formatting only.

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

None. Base code provisions are now utilized, formatting only.

Impact to industry relative to the cost of compliance with code

None. Base code provisions are now utilized, formatting only.

Requirements

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

N/A – Removing HVHZ sections, base code encompasses and includes all previous HVHZ requirements.

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

N/A – Removing HVHZ sections, base code encompasses and includes all previous HVHZ requirements.

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

N/A – Removing HVHZ sections, base code encompasses and includes all previous HVHZ requirements.

Does not degrade the effectiveness of the code

N/A – Removing HVHZ sections, base code encompasses and includes all previous HVHZ requirements.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4926 Text Modification

1401.1 Scope. The provisions of this chapter shall establish the minimum requirements for exterior walls, exterior wall coverings, exterior wall openings, exterior windows and doors, architectural trim, balconies and similar projections; and bay and oriel windows.

~~Exception: Buildings and structures located within the high-velocity hurricane zone shall comply with the provisions of Sections 1403.8 and 1410.~~

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_4926_TextOfModification_1.png

S5733

Date Submitted	7/29/2012	**Section**	1404.13	**Proponent**	Joseph Belcher
Chapter	14	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

1710.9 containing labeling requirements for manufactured soffits.

Summary of Modification

Provides reference to labeling requirments for manufactured soffits.

Rationale

The provisions were originally adopted in the 2010 FBC in response to problems revealed in the hurricanes of 2004. The proposal will help assure compliance with the labeling requirements for soffits by providing a reference to those requirements. The hurricanes of 2004 revealed a very weak link in the building water intrusion resistance system, soffits. In numerous cases severe water damage was caused by rain blown in through soffit spaces where the soffit was blown out or dislodged. In most cases the storms were below design wind speeds. In response, the Commission appointed a Soffit Work Group to study the issue and propose changes as deemed necessary. While the work group is ongoing, the labeling provisions are based on the work of the work group to date.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact - currently in effect. The proposal assists with compliance with the labeling requirements for soffits by providing a reference to those requirements. Labeling permits local enforcement to ascertain compliance as documentation to verify the installation is available for inspectors.

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

There will be no impact as the proposal is merely a reference to another section of the code.

Impact to industry relative to the cost of compliance with code

There will be no impact as the proposal is merely a reference to another section of the code.

Requirements

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

The proposal will benefit the public by making certain provisions improving the ability of soffits to resist water intrusion are not overlooked in the building design.

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

The proposal strengthens the code by helping to make certain requirements improving the ability of soffits to resist water intrusion are not overlooked in the building design.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code by addressing a known weak area in the weather resistance provisions of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5733 Text Modification

1404.13 Manufactured soffit materials and systems shall be labeled in accordance with the provisions of Section 1710.9 of this code.

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The State of Florida is the only one of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection. Extensive damage was caused by water intrusion due to soffit failure during the storms of 2004. The history of loss to water intrusion through failed soffits indicates the need for more vigorous requirements than those provided by the base code.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5733_PQ2_EvidenceData_Soffit_1.png

S5733 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5733_PQ3_Submitted_Time_IBC_IRC_1.png

S4801

Date Submitted	7/5/2012	**Section**	1404.5.1	**Proponent**	Michael Goolsby
Chapter	14	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

With the elimination of Chapter 14 HVHZ sections, formatting of certain base code sections becomes necessary. Where Chapter 14 sections give guidance to non-Chapter 14 sections, those sections must be modified to also contain direction to the equivalent HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions not utilized in HVHZ, requiring direction through formatting to relevant HVHZ sections.

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

None. Base code provisions not utilized in HVHZ, requiring direction through formatting to relevant HVHZ sections.

Impact to industry relative to the cost of compliance with code

None. Base code provisions not utilized in HVHZ, requiring direction through formatting to relevant HVHZ sections.

Requirements

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary direction to applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4801 Text Modification

1404.5.1 Aluminum siding.

Aluminum siding shall conform to the requirements of AAMA 1402 and TAS 202 and 203 in the HVHZ.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_4801_TextOfModification_1.png

3.2 Using Table 1 or Table 2 below, as applicable, determine the minimum design pressure for each respective roof area, which corresponds to the applicable roof height range.

TABLE 1 – Risk Category II Exposure Category 'C'[1] MINIMUM DESIGN WIND UPLIFT PRESSURES, IN PSF FOR FIELD (P_{asd} (1), PERIMETER (P_{asd} (2) AND CORNER (P_{asd} (3) AREAS OF ROOFS FOR EXPOSURE 'C' BUILDINGS[2]			
Roof mean height (below)	P_{asd} (1) Field	P_{asd} (2) (Perimeter)	P_{asd} (3) (Corners)
20	~~-49.2~~ -42.8	~~-82.6~~-71.7	~~-124.3~~-108.0
25	~~-51.4~~-44.8	~~-86.3~~-75.1	~~-129.9~~-113.0
30	~~-53.6~~-46.4	~~-89.9~~-77.8	~~-135.3~~-117.2
35	~~-55.2~~-48.1	~~-92.7~~-80.6	~~-139.5~~-121.3
40	~~-56.9~~-49.4	~~-95.4~~-82.9	~~-143.6~~-124.7

[1] Calculated in accordance with ASCE 7.

[2] $P_{asd} = 0.6P_{ult}$

TABLE 2– Risk Category II Exposure Category 'D' MINIMUM DESIGN WIND UPLIFT PRESSURES, IN PSF FOR FIELD (P_{asd} (1), PERIMETER (P_{asd} (2) AND CORNER (P_{asd} (3) AREAS OF ROOFS FOR EXPOSURE 'D' BUILDINGS			
Roof mean height (below)	P_{asd} (1) Field	P_{asd} (2) (Perimeter)	P_{asd} (3) (Corners)
20	-51.4	-86.2	-129.7
25	-53.4	-89.5	-134.7
30	-55.0	-92.3	-138.9
35	-56.4	-94.5	-142.3
40	-57.7	-96.8	-145.6

[1] Calculated in accordance with ASCE 7.

[2] $P_{asd} = 0.6P_{ult}$

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3.3 Referencing the selected Roof Assembly Product Approval, check that the listed maximum allowable design pressure for the particular approved system meets or exceeds those listed in Table 1 or Table 2 above, as applicable.

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S4931

Date Submitted	7/5/2012	**Section**	1405.1	**Proponent**	Michael Goolsby
Chapter	14	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

With the elimination of Chapter 14 HVHZ sections, formatting of certain base code sections becomes necessary. Where Chapter 14 sections give direction to non-HVHZ provisions/standards, those sections must be modified to also contain direction to the equivalent HVHZ section/standard.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions are now utilized, formatting only.

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

None. Base code provisions are now utilized, formatting only.

Impact to industry relative to the cost of compliance with code

None. Base code provisions are now utilized, formatting only.

Requirements

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

Provides necessary direction to applicable and equivalent HVHZ code sections/standards.

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

Provides necessary direction to applicable and equivalent HVHZ code sections/standards.

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

Provides necessary direction to applicable and equivalent HVHZ code sections/standards.

Does not degrade the effectiveness of the code

Provides necessary direction to applicable and equivalent HVHZ code sections/standards.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4931 Text Modification

1405.1 General.

Exterior wall coverings shall be designed and constructed in accordance with the applicable provisions of this section and TAS 202 and 203 in the HVHZ.

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S5728

Date Submitted	7/29/2012	**Section**	1405.1	**Proponent**	Joseph Belcher
Chapter	14	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Brings forward modifications to AAMA 1402.

Rationale

The code adopts an old version of AAMA 1420 which does not meet current windloads. I understand the standard is not being updated, but the base code adopts the 1986 Edition.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None - Provisions brought forward no new requirments established.

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

None - Provisions brought forward no new requirments established.

Impact to industry relative to the cost of compliance with code

None - Provisions brought forward no new requirments established.

Requirements

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

Increases public safety by updating wind load resistance criteria.

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

Improves code by updating old and ineffective wind load resistance criteria.

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

Does not discriminate.

Does not degrade the effectiveness of the code

Improves effectiveness of code by updating old and ineffective wind load resistance criteria.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

The provisions in the base code are based on an old standard adopting defective wind resistance provisions.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

The amendment updates the performace criteria of an outdated standard. Tremendous damage was inflicted during the hurricanes of 2004 and 2005 due to water entry from dislocated or blown off soffit material. The serious nature of the shortcomings of an adopted standard merits modification for Florida.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1404.5 Metal. Exterior walls of formed steel construction, structural steel or lightweight metal alloys shall be designed in accordance with Chapters 22 and 20, respectively.

1404.5.1 Aluminum siding. Aluminum siding shall conform to the requirements of AAMA 1402.

AAMA 1402, shall be modified to read as follows:

Section 1 Standard Specifications for Aluminum Siding, Soffit, and Fascia, 2.0 Siding Specifications, 2.2 Performance Criteria, 2.2.1 Windload Resistance

2.2.1.1 Static Pressure Test

2.2.1.1.1
All siding products shall be capable of resisting the design pressures specified for walls for components and cladding loads in accordance with Section 1609.1.1. To verify that the siding will perform under these conditions, it shall be tested in accordance with Test Method #1, "Standard for Testing of Aluminum Siding/Fastener for Windload Resistance" or in an approved manner. The static test pressure shall be as required to demonstrate compliance with the provisions of Section 1609.1.

2.2.1.1.2
For applications where the effective design pressure as specidifed in Section 1609.1.1 is greater than 1040 Pa(21.7 psf) [e.g. wind zone areas greater than 36 m/s (80 mph) or elevations above 33 feet (10 m)] the product shall b tested in accordance with Test Method #1 under a static test pressure determined by the formula:

$P_T = 1.5 \times DP$

Where:

P_T = Static Test Pressure [Pa (psf)]
DP = Design Pressure [Pa (psf)]
1.5 = Safety Factor

*** Delete Section 2.2.1.2 and corresponding table.**

Strike Table:

See uploaded support file for table.

3.0
Soffit and Fascia Specifications, 3.2 Performance Criteria, 3.2.1 Windload Resistance

Page: 1
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3.2.1.1 Static Pressure Test

3.2.1.1.1
All soffit products shall be capable of resisting the design pressures specified for walls for components and cladding loads in accordance with Section 1609.1.1. To verify that the soffit will perform under these conditions, it shall be tested in the maximum unsupported length for which the manufacturer seeks conformance when tested in accordance with Test Method #4, "Standard for Testing of Soffits and Windload Resistance."

The static test pressure shall be as required to demonstrate compliance with the provisions of Section 1609.1.

3.2.1.1.2
For applications where the effective design pressure as specified in Section 1609.1.1 is greater than 1040 Pa (21.7 psf) [e.g. wind zone areas greater than (80 mph) 36 m/s or elevations above (33 ft) 10 m] the product shall be tested in accordance with Test Method #4 under a static test pressure determined by the formula:

$P_T = \times 1.5 \times DP_p$

Where:

P_T = Static Test Pressure [Pa (psf)]
DPp = Design Pressure [Pa (psf)]
1.5 = Safety Factor

Section 3, Appendix, Windload Criteria is deleted in its entirety.

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AAMA 1402, shall be modified to read as follows:

Section 1 Standard Specifications for Aluminum Siding, Soffit, and Fascia, 2.0 Siding Specifications, 2.2 Performance Criteria, 2.2.1 Windload Resistance

2.2.1.1 Static Pressure Test

2.2.1.1.1
All siding products shall be capable of resisting the design pressures specified for walls for components and cladding loads in accordance with Section 1609.1.1. To verify that the siding will perform under these conditions, it shall be tested in accordance with Test Method #1, "Standard for Testing of Aluminum Siding/Fastener for Windload Resistance" or in an approved manner. The static test pressure shall be as required to demonstrate compliance with the provisions of Section 1609.1

2.2.1.1.2
For applications where the effective design pressure as specified in Section 1609.1.1 is greater than 1040 Pa(21.7 psf) (e.g. wind zone areas greater than 36 m/s (80 mph) or elevations above 33 feet (10 m)) the product shall b tested in accordance with Test Method #1 under a static test pressure determined by the formula:

$P_T = 1.5 \times DP$

Where:

P_T = Static Test Pressure [Pa (psf)]

DP = Design Pressure [Pa (psf)]

1.5 = Safety Factor

* Delete Section 2.2.1.2 and corresponding table.

Strike Table:

	MINIMUM THICKNESS ± 0.05 MM (± .002 IN)	MAXIMUM PANEL WIDTH	MAXIMUM FLAT AREA
Unbacked Siding	0.5 mm (0.019 in)	260 mm (10 in)	210 mm (8 in)
Backed Siding	0.5 mm (0.019 in)	460 mm (10 in)	260 mm (10 in)

3.0
Soffit and Fascia Specifications, 3.2 Performance Criteria, 3.2.1 Windload Resistance

3.2.1.1 Static Pressure Test

3.2.1.1.1
All soffit products shall be capable of resisting the design pressures specified for walls for components and cladding loads in accordance with Section 1609.1.1. To verify that the soffit will perform under these conditions, it shall be tested in the maximum unsupported length for which the manufacturer seeks conformance when tested in accordance with Test Method #4, "Standard for Testing of Soffits and Windload Resistance."

The static test pressure shall be as required to demonstrate compliance with the provisions of Section 1609.1.

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S5728 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

Page: 1

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S4932

Date Submitted	7/5/2012	**Section**	1405.17	**Proponent**	Michael Goolsby
Chapter	14	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

With the elimination of Chapter 14 HVHZ sections, formatting of certain base code sections becomes necessary. Where Chapter 14 Table/sections give guidance to non-Chapter 14 sections, those sections must be modified to also contain guidance to the equivalent HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions now utilized in HVHZ, requiring direction through formatting to relevant HVHZ sections.

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

None. Base code provisions now utilized in HVHZ, requiring direction through formatting to relevant HVHZ sections.

Impact to industry relative to the cost of compliance with code

None. Base code provisions now utilized in HVHZ, requiring direction through formatting to relevant HVHZ sections.

Requirements

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary direction to applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4932 Text Modification

Page: 1

1405.17 Fastening.

Weather boarding and wall coverings shall be securely fastened with aluminum, copper, zinc, zinc-coated or other *approved* corrosion-resistant fasteners in accordance with the nailing schedule in Table 2304.9.1, the HVHZ shall comply with Table 2323.1 or the *approved* manufacturer's installation instructions. Shingles and other weather coverings shall be attached with appropriate standard-shingle nails to furring strips securely nailed to studs, or with *approved* mechanically bonding nails, except where sheathing is of wood not less than 1-inch (25 mm) nominal thickness or of wood structural panels as specified in Table 2308.9.3(3), the HVHZ shall comply with Section 2322.

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S4922

Date Submitted	7/2/2012	**Section**	1410	**Proponent**	Oriol Haage
Chapter	14	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Delete HVHZ Sections

Rationale

Deletion of Chapter 14 HVHZ sections in order to adopt base code provisions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions are now utilized, formatting only.

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

None. Base code provisions are now utilized, formatting only.

Impact to industry relative to the cost of compliance with code

None. Base code provisions are now utilized, formatting only.

Requirements

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

N/A – Removing HVHZ sections and adopting base code.

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

N/A – Removing HVHZ sections and utilizing base code.

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

N/A – Removing HVHZ sections and utilizing base code.

Does not degrade the effectiveness of the code

N/A – Removing HVHZ sections and utilizing base code.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

Section 1410

High-Velocity Hurricane Zone Other Materials.

1410.2 Asphalt shingles. Asphalt shingles shall be applied only to solid wood sheathing and shall be in tin-capped and spot-stuck, as set forth in Sections 1512 through 1525.

1410.3 Roll slate or felt. Roll slate or felt shall be applied only to solid wood sheathing and shall be secured by nailing, as set forth in Chapter 15, High-Velocity Hurricane Zones.

1410.4 Metal shingles. Metal shingles shall be applied only to solid wood sheathing and shall be secured as set forth in Chapter 15, (High-Velocity Hurricane Zones).

1410.5 Steel shingles. Steel Siding shall be designed and applied as set forth in Sections 2214 through 2224.

1410.6 Aluminum siding. Aluminum siding shall be designed and applied as set forth in Section 2003.

1410.7Veneers. Masonry veneers shall be applied as set forth in Sections 2118 through 2122.

1410.9 Other materials. Any cladding materials or assembly not addressed in this code shall be classified by the building official as the one it most nearly resembles, and shall comply with the requirements for loading and fire resistance herein required for such materials and assemblies.

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S4933

Date Submitted	7/5/2012	**Section**	Table 1405.2	**Proponent**	Michael Goolsby
Chapter	14	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

With the elimination of Chapter 14 HVHZ sections, formatting of certain base code sections becomes necessary. Where Chapter 14 Table/sections give guidance to non-Chapter 14 sections, those sections must be modified to also contain guidance to the equivalent HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions are now applicable, formatting only.

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

None. Base code provisions are now applicable, formatting only.

Impact to industry relative to the cost of compliance with code

None. Base code provisions are now applicable, formatting only.

Requirements

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

Provides necessary guidance to applicable and equivalent HVHZ code sections.

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

Provides necessary guidance to applicable and equivalent HVHZ code sections.

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

Provides necessary guidance to applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary guidance to applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4933 Text Modification

Page: 1

TABLE 1405.2 MINIMUM THICKNESS OF WEATHER COVERINGS

COVERING TYPE	MINIMUM THICKNESS (inches)
Adhered masonry veneer	0.25
Aluminum siding	0.019
Anchored masonry veneer	2.625
Asbestos-cement boards	0.125
Asbestos shingles	0.156
Cold-rolled copper[d]	0.0216 nominal
Copper shingles[d]	0.0162 nominal
Exterior plywood (with sheathing)	0.313
Exterior plywood (without sheathing)	See Section 2304.6(HVHZ see Section 2315.2)
Fiber-cement lap siding	0.25[c]
Fiber-cement panel siding	0.25[c]
Fiberboard siding	0.5
Glass-fiber reinforced concrete panels	0.375
Hardboard siding[c]	0.25
High-yield copper[d]	0.0162 nominal
Lead-coated high-yield copper	0.0162 nominal
Marble slabs	1
Particleboard (with sheathing)	See Section 2304.6 (HVHZ see Section 2315.1.11)
Particleboard (without sheathing)	See Section 2304.6 (HVHZ see Section 2315.1.11)
Precast stone facing	0.625
Steel (approved corrosion resistant)	0.0149
Stone (cast artificial)	1.5
Stone (natural)	2
Structural glass	0.344
Stucco or exterior cement plaster	
Three-coat work over:	
Metal plaster base	0.875[b]
Unit masonry	0.625[b]
Cast-in-place or precast concrete	0.625[b]
Two-coat work over:	
Unit masonry	0.5[b]
Cast-in-place or precast concrete	0.375[b]
Terra cotta (anchored)	1
Terra cotta (adhered)	0.25
Vinyl siding	0.035
Wood shingles	0.375
Wood siding (without sheathing)[a]	0.5
Lead-coated copper[d]	0.0216 nominal

For SI: 1 inch = 25.4 mm, 1 ounce per square foot = 0.305 kg/m^2.

a. Wood siding of thicknesses less than 0.5 inch shall be placed over sheathing that conforms to Section 2304.6. (HVHZ see Section 2315.2)

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b. Exclusive of texture.
c. As measured at the bottom of decorative grooves.

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Date Submitted	7/20/2012	**Section**	1601.1	**Proponent**	Michael Goolsby
Chapter	16	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

Legislative mandate resulted in deletion of non-wind related provisions of Chapter 16 HVHZ, making necessary the utilization of base code elements related to live loads and floodplain provisions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Code provisions are now found in the base code.

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

None. Code provisions are now found in the base code.

Impact to industry relative to the cost of compliance with code

None. Code provisions are now found in the base code.

Requirements

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

This modification provides direction to the applicable section of the base code related to live loads.

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

This modification provides direction to the applicable section of the base code related to live loads.

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

This modification provides direction to the applicable section of the base code related to live loads.

Does not degrade the effectiveness of the code

This modification provides direction to the applicable section of the base code related to live loads.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5425 Text Modification

1601.1 Scope. The provisions of this chapter shall govern the structural design of buildings, structures and portions thereof regulated by this code.

Exception: Buildings and structures located within the high-velocity hurricane zone shall comply with the provisions of Section 1605, 1607, 1611, Sections 1616 through 1626 and, as applicable in flood hazard areas, Section 1612.

Page: 1

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S5116

Date Submitted	7/13/2012	**Section**	1605	**Proponent**	Suzanne Davis
Chapter	16	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Section 1605.3.1.1 Declaratory statement determined by the Commission. To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Rationale

Declaratory statement determined by the Commission. To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Currently used under the 2010 Code, no new requirements being established

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

Currently used under the 2010 Code, no new requirements being established

Impact to industry relative to the cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Requirements

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

Does not degrade the effectiveness of the code

Carried over from the previous, field tested and proven to be effective

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

Declaratory statement determined by the Commission. To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

Proponent Ken Cureton **Submitted** 9/21/2012 **Attachments** No

Comment:
The proposal provides for provisions with regard to load reduction as per DCA03-DEC-091.

S5116-G1

Section 1605.3.1.1 Load reduction, revise text to read as follows:

1605.3.1.1 ~~Stress increases~~ Load reduction.

1. Increases in allowable stress specified in the materials, sections of this code or a referenced standard shall not be permitted to be used with load combinations of Sections 1605.3.1. Duration of load increase shall be permitted in accordance with Chapter 23.

Exception: Increases in allowable stress shall be permitted in accordance with ACI 530/ASCE 5/TMS 402 provided the loads in the load combinations of Equations 16-11 and 16-13 are not reduced.

2. Simultaneous use of both one-third increase in allowable stress and the 25 percent reduction in combined loads shall not be permitted

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S5118

Date Submitted	7/13/2012	**Section**	1609 Wind Loads	**Proponent**	Suzanne Davis
Chapter	16	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Figure 1609 A, B, C Wind Maps added To be consistent with the 2010 FBC Wind maps to continue to provide for improved resolution for the maps and to implement the Commission plan to update the 2013 Code

Rationale

Add maps to provide better resolution wind speed maps in the foundation code. To implement the Commission plan to update the 2013 Code

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Currently used under the 2010 Code, no new requirements being established

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

Currently used under the 2010 Code, no new requirements being established

Impact to industry relative to the cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Requirements

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

Does not degrade the effectiveness of the code

Carried over from the previous, field tested and proven to be effective

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

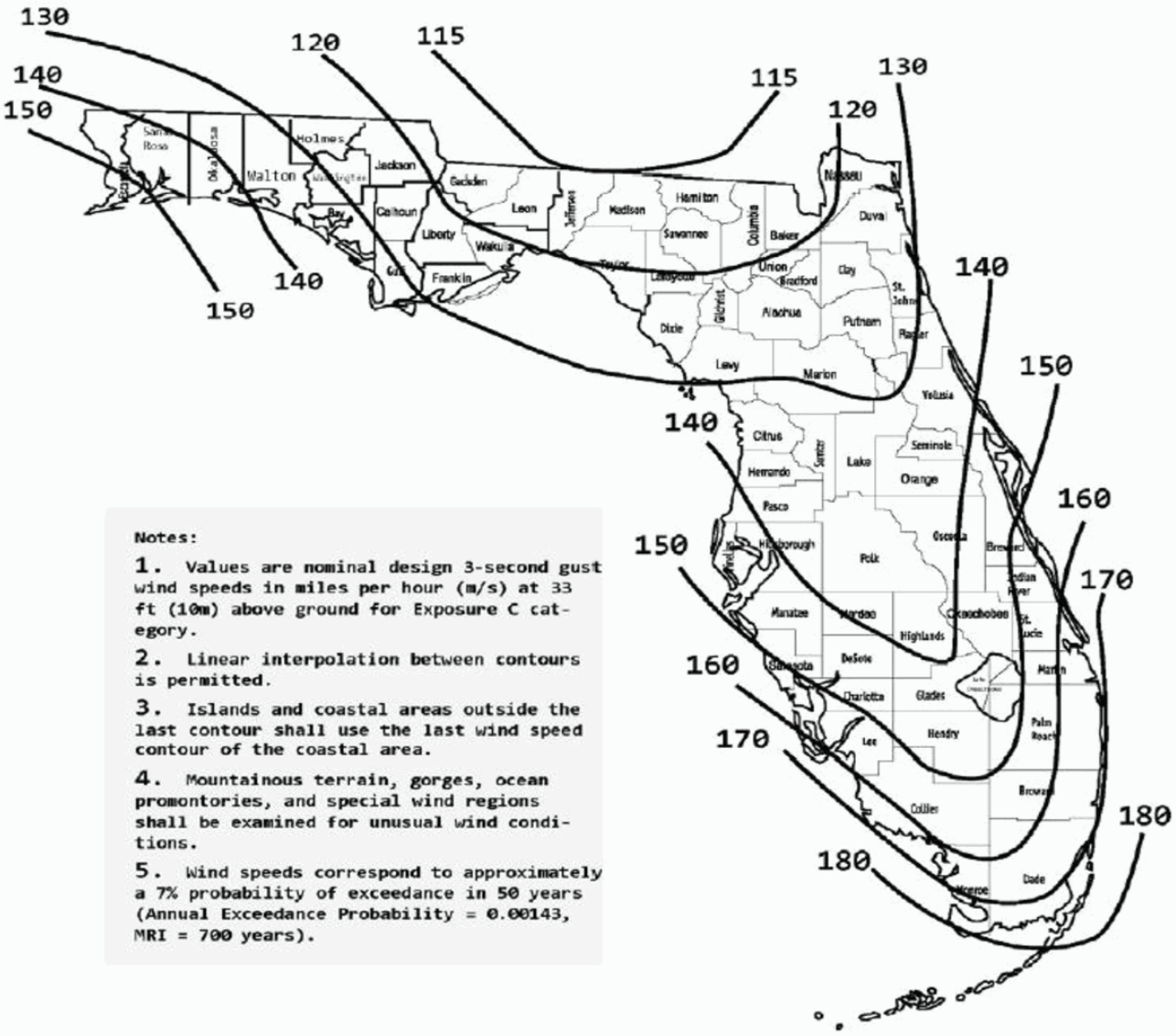
Explanation of Choice

Add maps to provide better resolution wind speed maps in the foundation code. To implement the Commission plan to update the 2013 Code

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

FIGURE 1609A ULTIMATE DESIGN WIND SPEEDS, V_{ULT}, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES



Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 years).

FIGURE 1609B ULTIMATE DESIGN WIND SPEEDS, V_{ULT}, FOR RISK CATEGORY III AND IV BUILDINGS AND OTHER STRUCTURES

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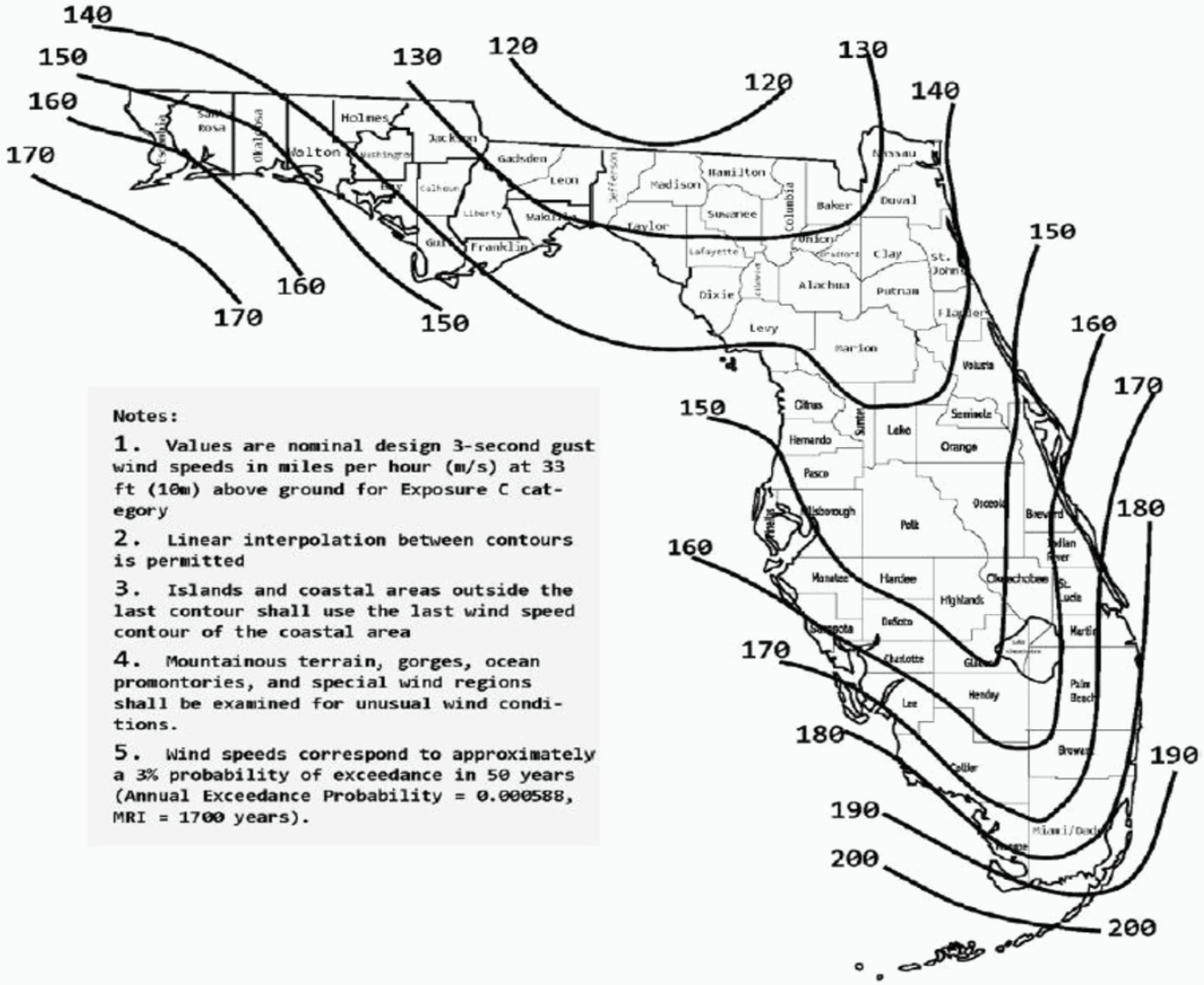
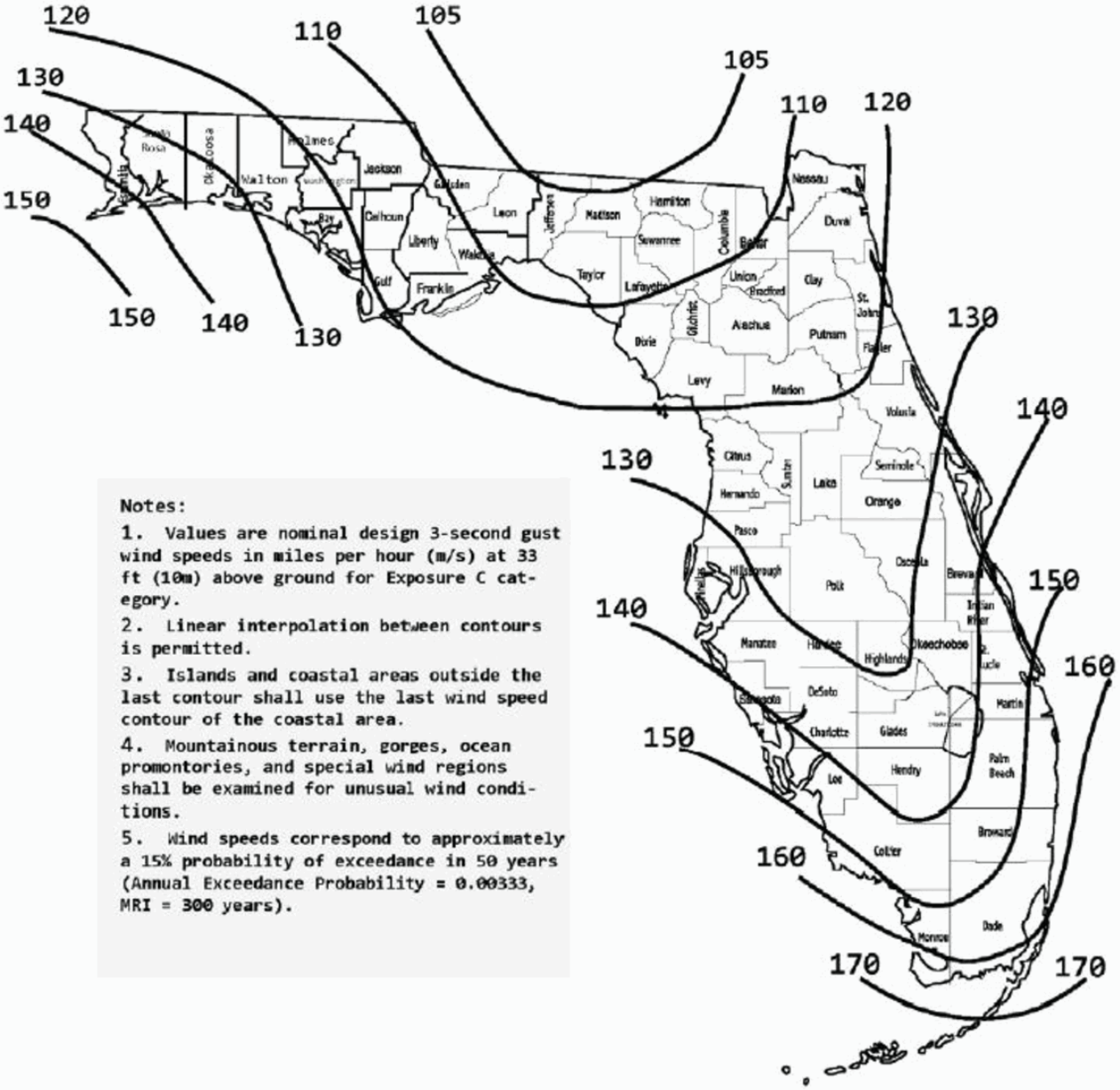


FIGURE 1609C ULTIMATE DESIGN WIND SPEEDS, V_{ULT}, FOR RISK CATEGORY I BUILDINGS AND OTHER STRUCTURES

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5118_TextOfModification_2.png



Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation between contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 15% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00333, MRI = 300 years).

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S5121

Date Submitted	7/13/2012	**Section**	1609.1 Exceptions	**Proponent**	Suzanne Davis
Chapter	16	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Update Exception 5 to be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Rationale

To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Currently used under the 2010 Code, no new requirements being established

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

Currently used under the 2010 Code, no new requirements being established

Impact to industry relative to the cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Requirements

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

Does not degrade the effectiveness of the code

Carried over from the previous, field tested and proven to be effective

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5121-G1

Proponent Ken Cureton **Submitted** 9/21/2012 **Attachments** No

Comment:

The proposal provides for provisions with regard to communication towers as per 553.73(14) FS.

5. Designs using TIA-222 for antenna-supporting structures and antennas, provided the horizontal extent of Topographic Category 2 escarpments in Section 2.6.6.2 of TIA -222 shall be 16 times the height of the escarpment. Design using this standard shall be permitted for communication tower and steel antenna support structures.

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Date Submitted	7/24/2012	**Section**	1609.1.1	**Proponent**	T Stafford
Chapter	16	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Correlation with the 2010 FBC and ASCE 7-10 wind speeds.

Rationale

This proposal is correlation with existing requirements in the 2010 FBCB and clarifies the appropriate conversion required when using standards that are based on nominal wind speeds. The 2012 AF&PA WFCM has been updated to reflect the strength design-level wind speeds in ASCE 7-10. Therefore, no conversion is neccessary for the WFCM.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Much of this language is currently contained in the 2010 FBC. There will be no impact to local entity relative to enforcement of the code.

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

Much of this language is currently contained in the 2010 FBC. There will be no impact building and property owners relative to the cost of compliance with the code.

Impact to industry relative to the cost of compliance with code

Much of this language is currently contained in the 2010 FBC. There will be no impact to industry relative to the cost of compliance with the code.

Requirements

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

Much of this language is currently contained in the 2010 FBC. No new requirements are being proposed. It clarifies the appropriate conversion required when using standards that are based on nominal wind speeds.

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

Much of this language is currently contained in the 2010 FBC. No new requirements are being proposed. It clarifies the appropriate conversion required when using standards that are based on nominal wind speeds.

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

Much of this language is currently contained in the 2010 FBC. No new requirements are being proposed. It clarifies the appropriate conversion required when using standards that are based on nominal wind speeds.

Does not degrade the effectiveness of the code

Much of this language is currently contained in the 2010 FBC. No new requirements are being proposed. It clarifies the appropriate conversion required when using standards that are based on nominal wind speeds.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

This proposal is primarily a correlation and does not strengthen or weaken the code. It simply clarifies the Much of this language is currently contained in the 2010 FBC. No new requirements are being proposed. It clarifies the appropriate conversion required when using standards that are based on nominal wind speeds.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5608 Text Modification

Page: 1

1609.1.1 Determination of wind loads.
Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 30 of ASCE 7 or provisions of the alternate all-heights method in Section 1609.6. T~~he type of opening protection required, the ultimate design wind speed, *Vult*, and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7.~~ Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

Exceptions:

1. Subject to the limitations of Section 1609.1.1.1, the provisions of ICC 600 shall be permitted for applicable Group R-2 and R-3 buildings.

2. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AF&PA WFCM.

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

4. Designs using NAAMM FP 1001.

5. Designs using TIA-222 for antenna-supporting structures and antennas, provided the horizontal extent of Topographic Category 2 escarpments in Section 2.6.6.2 of TIA-222 shall be 16 times the height of the escarpment.

6. Wind tunnel tests in accordance with Chapter 31 of ASCE 7.

The wind speeds in Figures 1609A, 1609B and 1609C are ultimate design wind speeds, Vult, and shall be converted in accordance with Section 1609.3.1 to nominal design wind speeds, Vasd, when the provisions of the standards referenced in Exceptions 1,3,4 ~~through~~ and 5 are used unless the wind provisions in the standards are based on Ultimate Wind Speeds as specified in Figures 1609A, 1609B, or 1609C or Chapter 26 of ASCE 7.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5608_TextOfModification_1.png

Date Submitted	7/29/2012	**Section**	1609.1.1	**Proponent**	Joseph Belcher
Chapter	16	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

2002.4 - This mod provides a reference to section 2002.4 for the determination of wind loads on screen enclosures.

Summary of Modification

This mod provides a reference to section 2002.4 for the determination of wind loads on screen enclosures.

Rationale

The reference at Section 1609.1.1 to Section 2002.4 for determining the wind loads on screen enclosures has been in the FBC since the 2004 Edition. Section 2002.4 has been in the code since the first edition. The change is one of a series of changes incorporating requirements for the design of screen enclosures based on an engineering analysis of wind tunnel testing. The work was commissioned by the Aluminum Association of Florida and conducted by Dr. Timothy Reinhold, PE, PhD, at Clemson and Virginia Tech wind tunnels and Charley Everly, PE. The provisions are field tested and effective.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impacts to local entity relative to enforcement of code as the reference to the section for determining wind loads on screen enclosures have been in effect since the 2004 FBC and remain in effect. The existing provisions have proven effective and no new requirements are created.

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

No impacts to building or property owners as the reference to the section for determining wind loads on screen enclosures have been in effect since the 2004 FBC and remain in effect. The existing provisions have proven effective and no new requirements are created.

Impact to industry relative to the cost of compliance with code

No impacts to industry as the reference to the section for determining wind loads on screen enclosures have been in effect since the 2004 FBC and remain in effect. The existing provisions have proven effective and were originally proposed by industry.

Requirements

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

Bringing the provision forward improves safety and welfare of the general public by referencing the criteria for the design of screen enclosures to assure proper design.

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

Bringing the reference forward improves the code by providing a reference to the criteria for the design of screen enclosures.

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

The proposed amendment does not discriminate.

Does not degrade the effectiveness of the code

Improves the effectiveness of the code by providing a reference to the criteria for the design of screen enclosures.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

1609.1.1 Determination of wind loads. Wind loads on every building or structure shall be determined in accordance with Chapters 26 to 30 of ASCE 7 or provisions of the alternate all-heights method in Section 1609.6. The type of opening protection required, the ultimate design wind speed, *Vult*, and the exposure category for a site is permitted to be determined in accordance with Section 1609 or ASCE 7. Wind shall be assumed to come from any horizontal direction and wind pressures shall be assumed to act normal to the surface considered.

Exceptions:

1. Subject to the limitations of Section 1609.1.1.1, the provisions of ICC 600 shall be permitted for applicable Group R-2 and R-3 buildings.

2. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AF&PA WFCM.

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

4. Designs using NAAMM FP 1001.

5. Designs using TIA-222 for antenna-supporting structures and antennas provided the horizontal extent of Topographic Category 2 escarpments in Section 2.6.6.2 of TIA-222 shall be 16 times the height of the escarpment.

6. Wind tunnel tests in accordance with Chapter 31 of ASCE 7.

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

The wind speeds in Figures 1609A, 1609B and 1609C are ultimate design wind speeds, *Vult*, and shall be converted in accordance with Section 1609.3.1 to nominal design wind speeds, *Vasd*, when the provisions of the standards referenced in Exceptions 1 through 5 are used.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5732_TextOfModification_1.png

The base code definition does not address screen enclosures adequately and they are a common structure throughout Florida. The provisions are the result of scientific investigation specifically geared toward developing criteria for the construction of wind resistant screen enclosures. The fact that there are so many screen enclosures constructed in Florida and that the entire state is a hurricane prone region merits Florida specific provisions for the design of such structures.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5732_PQ2_ScreenEnc_Struct_Geo_Data_IBC_IRC_1.png

S5732 Prior Code Version question. submitted or attempted to be included

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

The provisions were submitted in the past and rejected in the International Building Code. A number of the provisions have been adopted as an appendix in the International Residential Code Appendix H. The Commission does not adopt appendices.

Page: 1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5732_PQ3_ScreenEnc_Submitted_IBC_IRC_1.png

Date Submitted	7/25/2012	**Section**	1609.1.2.1	**Proponent**	Joseph Belcher
Chapter	16	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Adds impact resistant covering as option to protect louvers.

Rationale

The proposal retains existing language providing an alternate for protecting louvers and allowing the continued use of products with product approval that are currently available on the market.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity relative to enforcement of code as the provision is in the FBCB 2010.

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

Will not result in any cost because the provision is contained in the FBCB 2010.

Impact to industry relative to the cost of compliance with code

Will not result in any cost because the provision is contained in the FBCB 2010.

Requirements

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

The provision enhances the health, safety, and welfare of the public by providing a cost effective alternate to protect louvers. The provisions are carried over from previous editions and are field tested and proven to be effective.

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

The provision strengthens the code by providing a cost effective alternate to protect louvers. The provisions are carried over from previous editions and are field tested and proven to be effective.

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

The provisions are carried over from previous editions and are field tested and proven to be effective and do not discriminate.

Does not degrade the effectiveness of the code

The provision improves the effectiveness of the code by providing a cost effective alternate to protect louvers. The provisions are carried over from previous editions and are field tested and proven to be effective and do not discriminate.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5667 Text Modification

Page: 1

1609.1.2.1 Louvers.

Louvers protecting intake and exhaust ventilation ducts not assumed to be open that are located within 30 feet (9144 mm) of grade shall meet requirements of AMCA 540 or shall be protected by an impact resistant cover complying with the large missile test of ASTM E 1996 or an approved impact-resistance standard.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5667_TextOfModification_1.png

The State of Florida is the only of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5667_PQ2_EvidenceData_1.png

S5667 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

Page: 1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5667_PQ3_Submitted_IBC_1.png

Date Submitted	8/1/2012	**Section**	1609.1.2.1	**Proponent**	Amanda Hickman
Chapter	16	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Corrects misprint in 2012 IBC on AMCA 540 - test standard for louvers.

Rationale

This modification corrects a misprint in the IBC.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Already in 2010 code.

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

None. Already in 2010 code.

Impact to industry relative to the cost of compliance with code

None. Already in 2010 code.

Requirements

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

Yes. Corrects a misprint in the 2012 IBC that is to be adopted.

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

Yes. Corrects a misprint in the 2012 IBC that is to be adopted.

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

No. Already exists in the 2010 code.

Does not degrade the effectiveness of the code

No, improves it. Corrects misprint in 2012 IBC.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

S5951 Text Modification

Louvers. Louvers protecting intake and exhaust ventilation ducts not assumed to be open that are located within 30 feet (9144 mm) of grade shall meet the requirements of ANSI/AMCA 540.

Page: 1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5951_TextOfModification_1.png

Date Submitted	7/26/2012	**Section**	1609.1.2.2	**Proponent**	Joseph Belcher
Chapter	16	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Provides correlation between ASTM E 1996, FBCB, and ASCE 7-10 regarding Wind Zone 4.

Rationale

See uploaded file.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity relative to enforcement of code.

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

Will result in a reduction in cost to building and property owners in areas included in Wind Zone 4 that are not intended by ASTM to be included in Wind Zone 4.

Impact to industry relative to the cost of compliance with code

Reduction in costs as only products with approval for use in HVHZ have been designed and tested to meet the increased impact requirements and the offset criteria intended for Wind Zone 4.

Requirements

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

The proposed amendment properly correlates the adoption of ASCE 7-10 with ASTM E 1996 within the Florida Building Code which has a reasonable connection with the health, safety, and welfare of the general public by not posing provisions greater than intended by the adopted reference standard.

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

The proposed amendment properly correlates the adoption of ASCE 7-10 with ASTM E 1996 within the Florida Building Code, Building, maintaining the intent of the standard which strengthens and improves the by not posing provisions greater than intended by the adopted reference standard.

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

The proposed amendment does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities and, in fact, removes what could be considered a discriminatory provision.

Does not degrade the effectiveness of the code

The proposed amendment properly correlates the adoption of ASCE 7-10 with ASTM E 1996 within the Florida Building Code, Building, maintaining the intent of the standard which does not degrade the effectiveness of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

The same provisions are contained in the base code. The original proponenet has indicated he will offer the same modification to the I-Codes during the next available cycle.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

Proponent Anthony Miller **Submitted** 9/23/2012 **Attachments** Yes

Comment:
See attached comment file.

S5668-G1

S5668 Text Modification

Page: 1

1609.1.2.2. Application of ASTM E 1996. The text of Section 6.2.2 of ASTM E 1996 shall be substituted as follows:

6.2.2 Unless otherwise specified, select the wind zone based on the strength design wind speed, *Vult*, as follows:

6.2.2.1 *Wind Zone 1*—130 mph ≤ ultimate design wind speed, *Vult* < 140 mph.

6.2.2.2 *Wind Zone 2*—140 mph ≤ ultimate design wind speed, *Vult* < 150 mph at greater than one mile (1.6 km) from the coastline. The coastline shall be measured from the mean high water mark.

6.2.2.3 *Wind Zone 3*—150 mph (58 m/s) ≤ultimate design wind speed, *Vult* ≤ ~~160~~ 170 mph (63 m/s), or 140 mph (54 m/s) ≤ ultimate design wind speed, *Vult* ≤ ~~160~~ 170 mph (63 m/s) and within one mile(1.6 km) of the coastline. The coastline shall be measured from the mean high water mark.

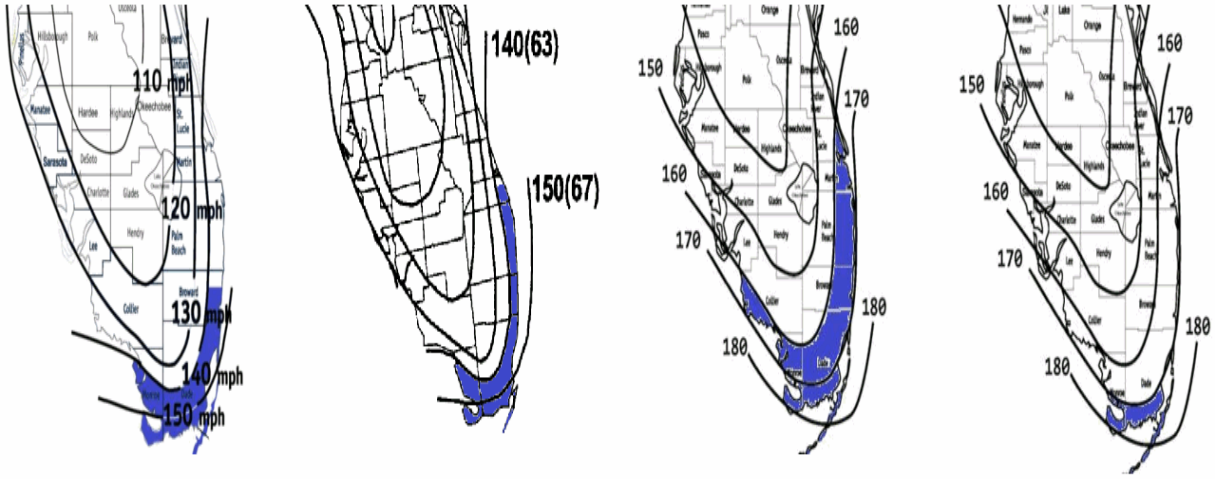
6.2.2.4 *Wind Zone 4*— ultimate design wind speed, *Vult* > ~~160~~ 170 mph (63 m/s)

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5668_TextOfModification_1.png

September 21, 2012

Wind Zone 4 Geographic Requirements

Map 1:	Map 2:	Map 3:	Map 4:
Wind Zone 4,	Wind Zone 4,	Wind Zone 4,	Wind Zone 4,
2007 FBC	ASCE 7-05/2009 IBC	2010 FBC/2012 IBC (Risk Category II)	As proposed by S5668



PGT is strongly opposed to Modification S5668 to modify section 1609.1.2.2 of the 2012 IBC which weakens the geographic requirements for Wind Zone 4 ("WZ4"). The 2010 FBC/2012 IBC WZ4 requirements closely mimic the ASCE 7-05 wind speed map (see maps 2 and 3 above), adding only slightly to WZ4 regions. The 2007 FBC map is not specifically referenced in ASTM E1996, however ASCE7 is referenced throughout the document. Apparently, the 2007 FBC map (see map 1 above) suggests that the 150 mph wind speed line should be truncated just below the Palm Beach County southern border which is not depicted on the map in ASCE 7-05 (see map 2 above). The Modification S5668 significantly weakens the current code. Products that go into the Wind-Borne Debris Region in very high wind speed areas should certainly be impacted in additional locations, including the glass lites and frames. These products are already in existence and have been heavily utilized since the 2004 FBC. This proposal will remove WZ4 requirements from some of the most hurricane prone regions in the State (see map 4 above). Section 1609.1.2.2 (2012 IBC) is already correct regarding this matter and does not require modification.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5668_G1_General_PGT Opposition to Modification S5668_1.png

The State of Florida is the only of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5668_PQ2_EvidenceData_1.png

S5668 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

Page: 1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5668_PQ3_Submitted_IBC_1.png

1. I have spoken with the proponent of the change, Eric Stafford, P.E. Mr. Stafford states the intent of the change was to correlate the provisions of ASTM E 1996 and the ultimate wind speeds of ASCE 7-2010 within the code. There was no intention to expand Wind Zone 4 into new areas of the State. The correlating change does much more than correlate the code by expanding Wind Zone 4 provisions for impact resistive systems intended for Miami-Dade County into more areas of the State than intended by ASTM.

2. The creation of Wind Zone 4 within ASTM E 1996 first appeared in the 2002 Edition of ASTM E 1996 at the request of the Miami-Dade County representative on the ASTM Committee. The wind zone was intended to apply to Miami-Dade County and Monroe County and the map used by the ASTM committee was the map from the Florida Building Code; not ASCE 7. Broward County, although not in a greater than 140 mph wind speed area, indirectly adopted the wind zone throughout by accepting only products approved for use in the HVHZ which have to meet HVHZ Protocols, thereby incorporating the more stringent provisions for Wind Zone 4. In addition, the FBCB HVHZ provisions prohibit impact protective systems from contact with glass due to deformation. (FBCB §1626.2.6.1; §1626.3.6.1)

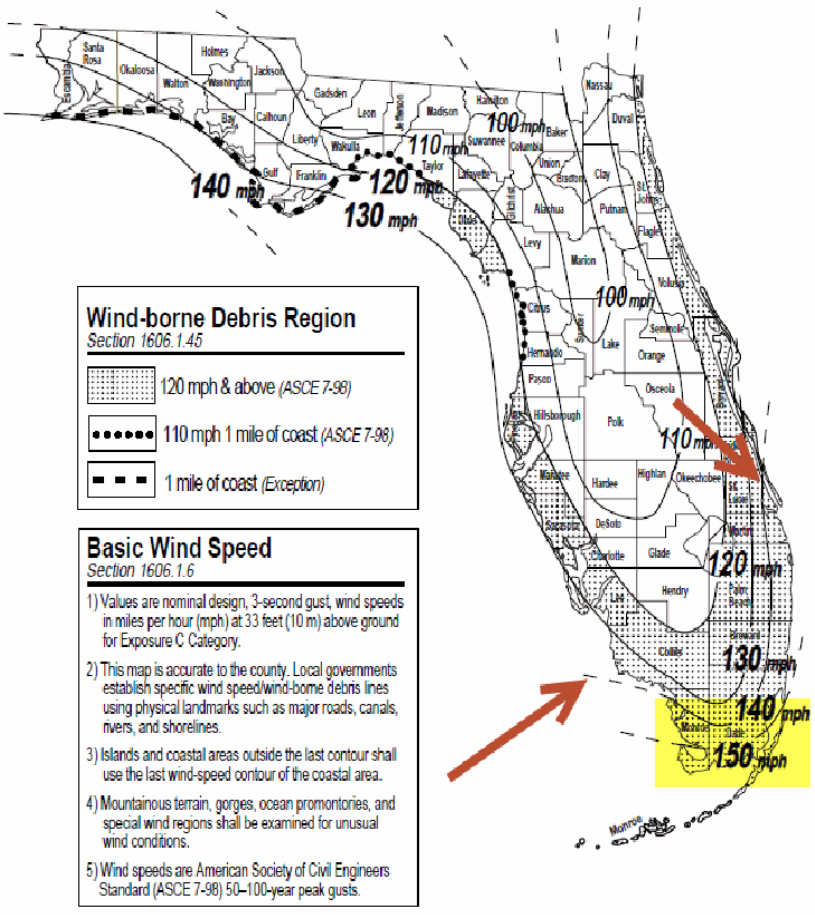
The Miami-Dade County (M-DC) standards (TAS 201 and 203) are more stringent than those of ASTM E 1996 for Wind Zones 1, 2, and 3 and ASTM E 1996 Wind Zone 4 was created to allow the use of ASTM E 1996 in Miami-Dade County. The problems with the economy prevented the continued participation by Miami-Dade County and as a result the task was not completed. Specific differences in Wind Zone 4 are the number of strikes during testing and the deflection criteria of the standard.

The M-DC test standards and ASTM E 1996, Wind Zone 4, require each specimen to withstand two strikes for the large missile test; ASTM E-1996 Wind Zones 1, 2, and 3 requires a single strike to each specimen. In addition, in Wind Zone 4 the standard calls for strikes directly on integral mullions and other intermediate members. The expansion of the requirements to other areas of the state adds cost to the products as well as to the testing of the products and goes well beyond the intent of the adopted standard.

Even more disconcerting are the requirements related to the offset of the impact protective systems. In Wind Zone 4 all impact protective systems are required to comply with the greater of the maximum deflection measured in accordance with Section 5.5, plus 25%, or the sum of the maximum deflection and residual deflection, as measured at Section 5.5, plus 25%. (ASTM E 1996-2005) ASTM E 1996-2006 and 2009 modify the requirements to apply to all non-porous systems in Wind Zone 4 requiring an offset of the greater of the maximum dynamic deflection measured at Section 5.5, plus 2 mm, or the sum of the maximum deflection and residual deflection as measured at Section 5.5, plus 2 mm. (ASTM E 1996-2006 and 2009, §8.3) In the field these requirements result in an offset of from three inches to more than eight inches depending on the materials used in the impact protective system. The expansion of the requirements to other areas of the state adds cost to the products as well as to the testing of the products and goes well beyond the intent of the adopted standard.

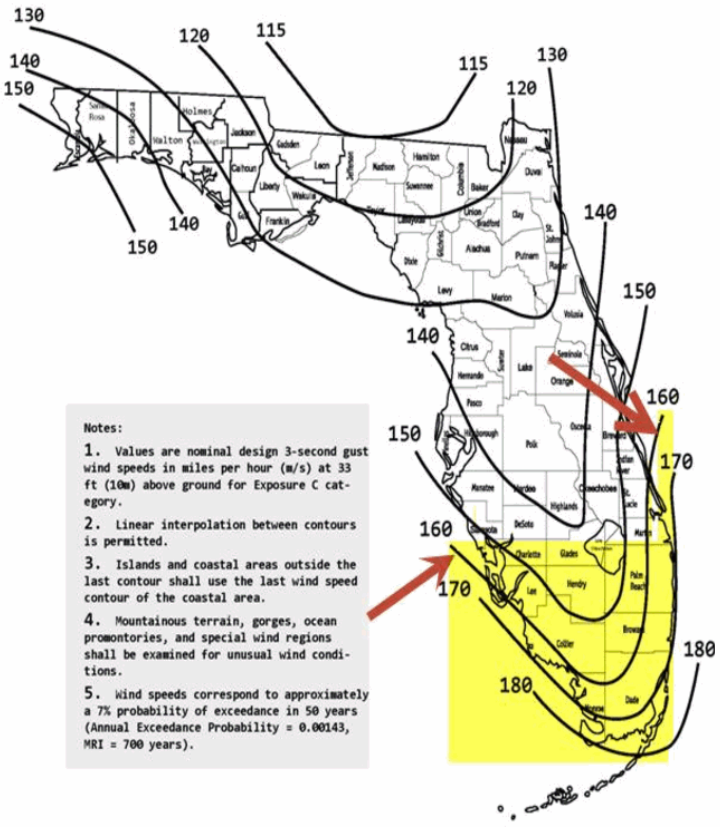
Page: 1

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FBC 2007

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FBC 2010

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S5759

Date Submitted	7/30/2012	**Section**	1609.1.2.3	**Proponent**	Jim Heise
Chapter	16	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section 1609.1.2.4 Impact resistant coverings. Add text to read as shown.

Rationale

Language carried over from the 2010 Code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

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

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

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

It does so by ensuring direction to applicable sections of the code are provided.

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

It does so by ensuring direction to applicable sections of the code are provided.

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5759 Text Modification

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1609.1.2.4 Impact resistant coverings.

Impact resistant coverings shall be tested at 1.5 times the design pressure (positive or negative) expressed in pounds per square feet as determined by the Florida Building Code, Building Section 1609 or ASCE 7 for which the specimen is to be tested. The design pressures, as determined from ASCE 7, are permitted to be multiplied by 0.6.

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Date Submitted	7/26/2012	**Section**	1609.1.2.4	**Proponent**	Joseph Belcher
Chapter	16	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Section 1710.8 Adopting labeling requirements.

Summary of Modification

Establishes factor of safety for testing of impact resistant coverings and provides reference to labeling requiremets for impact resistan coverings.

Rationale

The Commission appointed a workgroup to address issues related to impact resistant coverings. The proposal is the result of the workgroup and works in conjunction with the labeling requirements developed by the workgroup proposed for inclusion at Section 1710.8.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The provisions were originally established in response to a request form code enforcement personnel to provide labeling to assist field inspectors.

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

Will not result in any cost because the provision is contained in the FBCB 2010 and 2007 Editions.

Impact to industry relative to the cost of compliance with code

Will not result in any cost because the provision is contained in the FBCB 2010 and 2007 Editions.

Requirements

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

The provisions enhance the health, safety, and welfare of the general public by establishing a safety factor for testing and referencing proposed labeling criteria allowing for better field inspection of installed products.

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

They strengthen the code by establishing testing and labeling criteria allowing for better field inspection of installed products. The provisions are carried over from previous editions and are field tested and proven to be effective.

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

They strengthen the code by establishing testing and labeling criteria allowing for better field inspection of installed products. The provisions are carried over from previous editions and are field tested and proven to be effective.

Does not degrade the effectiveness of the code

The proposal improves the effectiveness of the code by establishing a safety factor for testing and providing labeling criteria allowing for better field inspection of installed products. The provisions are carried over from previous editions and are field tested and proven to be effective.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1609.1.2.4 Impact resistant coverings.

1609.1.2.4.1

Impact resistant coverings shall be tested at 1.5 times the design pressure (positive or negative) expressed in pounds per square feet as determined by the Florida Building Code, Building Section 1609 or ASCE 7, for which the specimen is to be tested. The design pressures, as determined from ASCE 7, are permitted to be multiplied by 0.6.

1609.1.2.4.2 Impact resistant coverings.

Impact resistant coverings shall be labeled in accordance with the provisions of Section 1710.8.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5669_TextOfModification_1.png

The State of Florida is the only of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5669_PQ2_EvidenceData_1.png

S5669 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5669_PQ3_Submitted_IBC_1.png

S5715

Date Submitted	7/27/2012	**Section**	1609.1.2.5	**Proponent**	Joseph Belcher
Chapter	16	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Retains alternate for testing side-hinged steel exterior doors.

Rationale

Carries forward an ANSI Standard for testing exterior side-hinged steel doors.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. The provision carries forward the adoption of and ANSI Standard from previous editions. They are field tested and proven to be effective.

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

Will not result in any cost because the provision is contained in the FBCB 2010 and 2007 Editions. The provisions are field tested and proven to be beneficial.

Impact to industry relative to the cost of compliance with code

Will not result in any cost because the provision is contained in the FBCB 2010 and 2007 Editions. The provisions are field tested and proven to be beneficial.

Requirements

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

The proposal enhances the health, safety, and welfare of the general public by providing an alternate standard for testing exterior steel doors.

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

The proposal strengthens the code by allowing the continued use of a previously adopted ANSI Standard. The provisions are carried over from previous editions and are field tested and proven to be effective.

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

The proposed amendment does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities and may be considered to remove discrimination.

Does not degrade the effectiveness of the code

The proposal improves the effectiveness of the code allowing the continued use of a previously adopted ANSI Standard. The provisions are carried over from previous editions and are field tested and proven to be effective.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1609.1.2.5 Optional exterior door component testing.

Exterior side-hinged door assemblies shall be permitted have the option to have the components of the assembly tested and rated for impact resistance in accordance with ANSI A 250.13.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5715_TextOfModification_1.png

The State of Florida is the only of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5715_PQ2_EvidenceData_1.png

S5715 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5715_PQ3_Submitted_IBC_1.png

Date Submitted	7/27/2012	**Section**	1609.1.2	**Proponent**	Joseph Belcher
Chapter	16	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None.

Summary of Modification

Retains provisions related to glazed opening protection; impact standards; statutory provisions related to storage sheds; and opening protection for sunrooms.

Rationale

The proposal retains existing language indicating the glazed opening is being protected, not just the glazing. This was placed in the code in the 2007 Supplements in response to a Declaratory Statement clarifying the application of ASTM E 1996-05 related to glass breakage. (DCA08 DEC002) The Declaratory Statement is valid for all editions of ASTM E 1996 adopted by reference by the FBCD, including the 2009 Edition.

Item 3 retains language added by Florida Statute.

Item 4 retains language approved by the Commission to allow sunrooms to be constructed and keep the cost reasonable in wind borne debris regions. It was recognized by the Commission that occupants will not be in the sunroom during a hurricane.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity relative to enforcement of code because the provisions retain what is in the FBCB 2010 and 2007 Editions. The provisions are field tested and proven to be beneficial to enforcement. The original proposal was supported by the hurricane protection industry.

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

Will not result in any cost because the provisions retain what is contained in the FBCB 2010 and 2007 Editions. The provisions are field tested and proven to be beneficial to the property owners. The original proposal was supported by the hurricane protection industry.

Impact to industry relative to the cost of compliance with code

Will not result in any cost because the provisions retain what is contained in the FBCB 2010 and 2007 Editions. The provisions are field tested and proven to be beneficial to the industry. The original proposal was supported by the hurricane protection industry.

Requirements

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

The provisions are carried over from previous editions and are field tested and proven to be effective.

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

The provisions are carried over from previous editions and are field tested and proven to be effective.

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

The provisions are carried over from previous editions and are field tested and proven to be effective and do not discriminate.

Does not degrade the effectiveness of the code

The provisions are carried over from previous editions and are field tested and proven to be effective.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1609.1.2 Protection of openings. In ***wind-borne debris regions***, ~~glazing~~ glazed openings in buildings shall be impact resistant or protected with an impact-resistant covering meeting the requirements of, SSTD 12, ANSI/DASMA 115 (for garage doors and rolling doors) or TAS 201, 202 and 203, AAMA 506. ASTM E 1996 and ASTM E 1886 referenced herein, or an ***approved*** impact-resistant standard as follows:

1. Glazed openings located within 30 feet (9.1 m) of grade shall meet the requirements of the Large Missile Test of ASTM E 1996.

2. Glazed openings located more than 30 feet (9.1 m) above grade shall meet the provisions of the Small Missile Test of ASTM E 1996.

3. Storage sheds that are not designed for human habitation and that have a floor area of 720 square feet (67 m2) or less are not required to comply with the mandatory windborne debris impact standards of this code.

4. Openings in sunrooms, balconies or enclosed porches constructed under existing roofs or decks are not required to be protected provided the spaces are separated from the building interior by a wall and all openings in the separating wall are protected in accordance with Section 1609.1.2 above. Such spaces shall be permitted to be designed as either partially enclosed or enclosed structures.

Exceptions unchanged.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5707_TextOfModification_1.png

The State of Florida is the only of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5707_PQ2_EvidenceData_1.png

S5707 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5707_PQ3_Submitted_IBC_1.png

S5607

Date Submitted	7/24/2012	**Section**	1609.1	**Proponent**	T Stafford
Chapter	16	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Clarifies the applicable wind loads for soffits.

Rationale

This proposal clarifies the applicable loads on soffits and wall coverings.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5607 Text Modification

1609.1 Applications. Buildings, structures and parts thereof shall be designed to withstand the minimum wind loads prescribed herein. Decreases in wind loads shall not be made for the effect of shielding by other structures.

All exterior wall coverings and soffits shall be capable of resisting the design pressures specified for wallsfor components and cladding loads in accordance with Section 1609.1.1.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5607_TextOfModification_1.png

S5734

Date Submitted	7/29/2012	**Section**	1609.1	**Proponent**	Joseph Belcher
Chapter	16	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

1710.9

Summary of Modification

Carries forward provison stipulating exterior wall coverings and soffits to be designed to resist C&C loads and reference to labeling repuirements for soffits.

Rationale

The first part of the proposal stipulating wall coverings and soffits are to be designed to the C & C loads as for walls was placed in the 2007 FBC to clarify the design criteria. The reference to the labeling criteria for soffits was added in the 2010 FBC to draw attention to the requirements. While the first part of the paragraph states “buildings, structures, and parts thereof”, there was confusion in the design community regarding whether or not wind design applied to wall coverings and soffits as they are not structural elements. The language was added as a clarification.

The proposal referencing the labeling requirements for soffits is to help assure compliance with the labeling provisions by providing another reference to those requirements. The hurricanes of 2004 revealed soffits to be a very weak link in the building water intrusion resistance system. In numerous cases severe water damage was caused by rain blown in through eaves where the soffit was blown out or dislodged. In most cases the storms were below design wind speeds. The referenced section on labeling contains changes work of the Soffit Work Group appointed by the Commission.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on cost – in current code. The proposal will enhance compliance with the design criteria for wall coverings and soffits and labeling requirements for soffits by stating the type design load type and providing a reference to the labeling requirements.

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

No impact on cost – in current code. The proposal benefits owners by clarifying the design criteria and referencing the labeling to allow for a code compliant building.

Impact to industry relative to the cost of compliance with code

There will be no impact as the proposal is currently in the code.

Requirements

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

The proposal will benefit the public by helping to make certain exterior wall coverings and soffits are properly designed and constructed.

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

The proposal improves the code by clarifying the types of wind loads to be used in the design of wall coverings and soffits and by providing a reference to the labeling requirements for soffits.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code clarifying the types of wind loads to be used in the design of wall coverings and soffits and increases awareness of the correct application of the code by providing a reference to the labeling requirements for soffits.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5734 Text Modification

1609.1 Applications. Buildings, structures and parts thereof shall be designed to withstand the minimum wind loads prescribed herein. Decreases in wind loads shall not be made for the effect of shielding by other structures.

All exterior wall coverings and soffits shall be capable of resisting the design pressures specified for walls for components and cladding loads in accordance with Section 1609.1.1. Manufactured soffits shall be labeled in accordance with Section 1710.9 of this code.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5734_TextOfModification_1.png

The State of Florida is the only one of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection. Extensive damage was caused by water intrusion due to soffit failure during the storms of 2004. The history of loss to water intrusion through failed soffits indicates the need for more vigorous requirements than those provided by the base code.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5734_PQ2_EvidenceData_Soffit_1.png

S5734 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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Date Submitted	7/24/2012	**Section**	1609.4.2	**Proponent**	T Stafford
Chapter	16	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Reinstates the open patch limitations for Surface Roughness C from the 2010 FBCB.

Rationale

This language is currently contained in the 2010 FBC. No new requirements are being proposed. This proposal pertains to open areas located in what are otherwise surface roughness B terrain. Numerous observations from the hurricanes of 2004 and 2005 indicated that buildings adjacent to these open areas suffered more damage to cladding than buildings a few rows back. ASCE 7 doesn't specifically address open patches within surface roughness B in the body of the standard. There is some guidance in the commentary to ASCE 7 that is similar to what is being proposed here. The language being proposed was agreed upon by IBHS and FHBA as a reasonable compromise to the guidance provided in the commentary to ASCE 7.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

Similar language is contained in the International Residential Code.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1609.4.2 Surface roughness categories.
A ground surface roughness within each 45-degree (0.79 rad) sector shall be determined for a distance upwind of the site as defined in Section 1609.4.3 from the categories defined below, for the purpose of assigning an exposure category as defined in Section 1609.4.3.

Surface Roughness B.
Urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger.

Surface Roughness C.
Open terrain with scattered obstructions having heights generally less than 30 feet (9144 mm). This category includes flat open country, and grasslands. This surface roughness shall also apply to any building located within surface roughness B-type terrain where the building is within 100 feet horizontally in any direction of open areas of surface roughness C or D-type terrain that extends more than 600 feet (182.9 m) in the upwind direction and a width greater than 150 feet.

Surface Roughness D.
Flat, unobstructed areas and water surfaces. This category includes smooth mud flats, salt flats and unbroken ice.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5613_TextOfModification_1.png

Date Submitted	7/19/2012	**Section**	1609.7	**Proponent**	Joseph Hetzel
Chapter	16	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Inclusion of garage door / rolling door wind load Table.

Rationale

The proposed Table is carried over from the 2010 Florida Building Code. Vult and equivalent Vasd wind speeds are both shown for convenience.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Continues improved efficiency in enforcing the code.

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

No adverse impact.

Impact to industry relative to the cost of compliance with code

No adverse impact.

Requirements

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

Contributes to public health, safety and welfare by clarifying Code application of wind loads to garage doors and rolling doors.

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

Preserves improvement of the Code.

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1609.7 Garage doors and rolling doors. Pressures from Table 1609.7(1) for wind loading actions on garage doors and rolling doors for buildings designed as enclosed shall be permitted.

Table 1609.7(1), Garage Door and Rolling Door Wind Loads For A Building With A Mean Roof Height of 30 Feet Located In Exposure B (PSF)

Vult DETERMINED IN ACCORDANCE WITH SECTION 1609.3 (M

Width (ft)	Height (ft)	100 MPH		110 MPH		120 MPH		130 MPH		140 MPH		150 MPH		160 MPH		1
	Roof Angle 0 - 10 degrees															
8	8	14.5	-16.4	17.5	-19.9	20.9	-23.6	24.5	-27.7	28.4	-32.2	32.6	-36.9	37.1	-42.0	4
10	10	14.0	-15.7	17.0	-19.0	20.2	-22.7	23.7	-26.6	27.5	-30.8	31.6	-35.4	35.9	-40.3	4
14	14	13.3	-14.8	16.1	-17.9	19.2	-21.4	22.5	-25.1	26.1	-29.1	30.0	-33.4	34.1	-38.0	3
	Roof Angle > 10 degrees															
9	7	9.6	-10.9	11.4	-12.9	13.7	-15.5	16.1	-18.2	18.5	-20.9	21.3	-24.1	24.3	-27.5	2
16	7	9.2	-10.3	10.9	-12.2	13.1	-14.6	15.5	-17.2	17.7	-19.7	20.4	-22.7	23.3	-26.0	2
78 MPH		85 MPH		93 MPH		101 MPH		108 MPH		116 MPH		124 MPH		132 MPH		1

Vasd converted from Ultimate Wind Speed per Section 1609.3.1

For SI: 1 foot = 304.8 mm, 1 mile per hour = 1.609 km/h, 1 psf = 47.88 N/m^2

1. For effective areas or wind speeds between those given above the load may be interpolated, otherwise use the load associated with the lower effective area.

2. Table values shall be adjusted for height and exposure by multiplying by the adjustment coefficient in Table 1609.7(2)

3. Plus and minus signs signify pressures acting toward and away from the building surfaces.

4. Negative pressures assume door has 2 feet of width in building's end zone.

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Date Submitted	7/30/2012	**Section**	1616.3	**Proponent**	Bonnie Manley
Chapter	16	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Mod #5644, Section 2222.4.4

Summary of Modification

This proposal, submitted on behalf of the steel industry, revises the requirements for the deflection of structural roofing and siding made of formed metal sheets to be more consistent with current testing requirements found in the FBC.

Rationale

Please see the attached file.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5643-G1

Proponent Jaime Gascon **Submitted** 9/21/2012 **Attachments** Yes

Comment:
See attached file.

1616.3 Deflections.

1616.3.1 Allowable deflections. The deflection of any structural member or component when subjected to live, wind and other superimposed loads set forth herein shall not exceed the following:

[preceding items remain]

12. For structural roofing made of formed metal sheets.....L/60

13. For secondary roof structural members supporting formed metal roofing.....L/150

14. For structural siding made of formed metal sheets.....L/90

15. For secondary wall structural members supporting formed metal siding.....L/135

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PROPOSED HVHZ ALLOWABLE DEFLECTION CHANGES TO METAL ROOFING AND WALL CONSTRUCTION

Structural metal roof panels in the HVHZ have been required to follow TAS110 section 15 since 1994. The protocol establishes testing structural panels to the requirements in TAS125, where slopes less than 2:12 are required to meet TAS114 Appendix G (Same procedure and test as in FM 4471 Appendix G). The roof water test criteria required in these standards is incompatible with the proposed delection criteria of L/60 and may provide erronoeus results when the actual delections during wind/rain events are multiples of that allowable by the test protocol.

The proposed metal wall panel deflection limit of L/90 can also provide unacceptable water infiltraftion performance by allowing excessive panel joint separation. The wall panel deflections will further be increased by the proposed increase in delection limits of the sub framing supporting the wall panels.

The recommendations of the NIST windstorm and coastal inundation failure study sited below clearly deliniates the need for further research. In addition to the NIST work, the Wall of Wind facility at Florida International University has the capability to perform large scale wind/rain simulations that can optimize roof and wall defelction criteria to reduce structural failure and water infiltration to acceptable levels. This reaserch will confirm or correctly modify existing HVHZ protocols to provide load and water infiltration requirements that are safe and adequately protect the public.

Excessive wind storm generated water infiltration can have disaterous effects on buildings, therefore it is suggested that the existing HVHZ deflection criteria remain in place until the NIST/FIU recommended studies can be performed.

National Institite of Standards and Technology (NIST) report TN 1476 – Performance of Physical Structures in Hurricane Katrina and Hurricane Rita: A Reconnaissance Report.

Recommendation 14. **Develop and implement special inspection requirements for connection and cladding attachments in pre-engineered metal buildings within model codes for hurricane prone regions.**
The NIST-led reconnaissance observed a considerable amount of damage to engineered metal buildings throughout the region affected by Hurricane Katrina and Rita. In many cases damage consisted of cladding that had been removed from the building due to wind pressure and in other cases, damage to the structural members was observed. The Structural Engineers Association of Washington (SEAW) submitted a code change proposal in March 2006 to the International Code Council to add special inspection requirements for pre-engineered metal buildings located in hurricane-prone regions to the IBC.
Affected Codes: International Building Code, NFPA 5000.
Primary Interested Government Entities: NIST. Interested Entities: ICC, NFPA.
(Florida reserves all of these provisions in chapter 17 of the FBC.)

Recommendation 16. **Conduct detailed studies to identify mechanisms for water ingress into buildings during hurricanes and to develop improved building envelope construction and cladding systems that are resistant to water ingress.**
Many buildings in the areas affected by Hurricanes Katrina and Rita, including critical hospital facilities, sustained little or no structural damage but had significant water ingress due to penetration of wind-driven

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rain around windows, through walls, damaged roofs, or displaced ductwork or equipment on roofs. Water ingress often led to complete shut down and loss of operation of the building for an extended period of time. Specific vulnerabilities identified in the Orange, Beaumont, Gulfport, Biloxi and Port Arthur areas are permeability of masonry cladding, weather tightness of hurricane-rated windows, and susceptibility of roof-mounted ductwork and vent covers to damage. A detailed performance assessment on the integrity of the envelope of major buildings is recommended to identify strategies to mitigate water ingress into buildings and dwellings during hurricanes.
Research in this area should be focused on providing guidance on the design, selection, and installation of cladding that considers the risk from wind-driven rain. Research should also consider accessibility requirements as specified by Fair Housing Act, Americans with Disabilities Act, and Section 504 of the Rehabilitation Act as appropriate. Results should be implemented in U.S. model building codes, ASCE and ASTM engineering standards. *Affected Standards: ASTM E-96; Affected Codes: International Building Code; International Residential Code; NFPA 5000.*
Primary Interested Government Entities: DOE. Interested Entities: HUD, FEMA, ASCE, ASTM, ICC, NFPA, and state and local building authorities.

Recommendation 20. **Conduct detailed studies of the performance of metal buildings subjected to hurricane force winds to fully understand and document the factors that contributed to their performance and make recommendations for improvements to future designs.**
A large number of steel buildings were affected by Hurricanes Katrina and Rita. These buildings exhibited a wide range of performance from minimal damage to significant damage to the cladding and/or the structure as a result of wind and impact of wind-borne debris. The construction of steel buildings and components is often proprietary and uses standard details and rules of thumb that have worked successfully in the past. Further study is recommended to investigate the connection details present in the buildings that did not collapse and to establish the ultimate strength of buildings relative to wind loading, taking into account wind directionality and the dynamical, stochastic nature of the load.
Primary Interested Government Entities: NIST. Interested Entity: Metal Building Manufacturers Association (MBMA)

For copy of the full report, see: http://www.nist.gov/el/disasterstudies/weather/katrina_and_rita.cfm

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FL Building Code Proposal

B. Manley, AISI

Section 1616.3.1

Reason Statement

Deflection criteria are serviceability limit states intended to ensure that excessive deflections do not cause cracking in brittle materials or otherwise compromise the building envelope. Conclusions were drawn after Hurricane Andrew, by the Building Code Evaluation Task Force, that failures of metal roofing and siding were, in part, due to the fact that the lighter materials deflect, or flutter too much and that more stringent deflection criteria would lead to better performance. Since that time, further research and testing has improved the design and testing requirements that are now incorporated in AISI S100, *North American Specification for the Design of Cold-Formed Steel Structural Members,* as well as FL Product Testing Requirements. There are impact test requirements and full scale uplift test requirements for all metal roof systems, in addition to minimum thickness requirements for standing seam roofs. To require even more stringent deflection criteria on top of these requirements is overly conservative and adds additional cost to a metal roofing system without necessarily increasing the performance or reliability of the system in a hurricane.

This proposal recommends uniform, consistent deflection criteria for all materials, taking into account the serviceability requirements for brittle or flexible finishes. Additionally, it maintains the reasonable amount of additional conservatism in the deflection criteria currently desired for wall panels and wall structural members in the high-velocity hurricane zone (HVHZ). Currently, the roof and floor requirements in the HVHZ are identical to those required for the rest of Florida (i.e. Section 1616.3.1, items 1, 2 and 3 are identical to the corresponding entries in FBC Table 1604.3). However, for vertical members and wall members or components, the HVHZ deflection limits are 50% more stringent than the corresponding entries in FBC Table 1604.3 (i.e. for brittle finishes wall criteria is L/360 vs. L/240 in Table 1604.3 and for flexible finishes L/180 vs. L/120 in Table 1604.3). This proposal takes a consistent approach by extracting the requirements of Table 1604.3 for roofs verbatim, and by making the wall deflection limits in the HVHZ 50% more stringent than those found in FBC Table 1604.3. This results in expanding note “a” of FBC Table 1604.3 into 4 additional deflection criteria in Section 1616.3.

Besides consistency, it is important to discuss why the proposed deflection criteria for metal roofing and siding and their supporting members are appropriate and their ultimate impact on performance. This proposal does not decrease the performance of metal roofs because an L/60

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S5433

Date Submitted	7/20/2012	**Section**	1616.5	**Proponent**	Michael Goolsby
Chapter	16	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Add reference for Table 1607.1 footnote

Rationale

With the elimination of Chapter 16 HVHZ sections, formatting of certain base code sections becomes necessary. Where Chapter 16 sections give guidance to sections not applicable in the HVHZ, an equivalent section has been created. The live load for balconies established is consistent with that contained in ASCE 7.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. No change in current code requirements.

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

None. No change in current code requirements.

Impact to industry relative to the cost of compliance with code

None. No change in current code requirements.

Requirements

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

Provides necessary direction for balcony design, while maintaining current level of compliance.

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

Provides necessary direction for balcony design, while maintaining current level of compliance.

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

Provides necessary direction for balcony design, while maintaining current level of compliance.

Does not degrade the effectiveness of the code

Provides necessary direction for balcony design, while maintaining current level of compliance.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1616.5 Live loads for balconies and decks shall be designed in accordance with ASCE 7.

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Provides a relevant applicable reference consistent with ASCE 7 where the code would otherwise be silent.

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S5429

Date Submitted	7/20/2012	**Section**	1617	**Proponent**	Michael Goolsby
Chapter	16	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Delete HVHZ Section to adopt base code provisions

Rationale

Section 1617 is being deleted in order to adopt equivalent sections of the base This HVHZ section is being removed to facilitate incorporation of Section 1611 of the base code in its entirety.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Requirements of the base code are equivalent to the deleted HVHZ section.

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

None. Requirements of the base code are equivalent to the deleted HVHZ section.

Impact to industry relative to the cost of compliance with code

None. Requirements of the base code are equivalent to the deleted HVHZ section.

Requirements

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

Yes. Removes unnecessary duplication in the HVHZ of base code provisions which are equivalent.

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

Yes. Removes unnecessary duplication in the HVHZ of base code provisions which are equivalent.

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

No, does not discriminate as all compliant installations are acceptable.

Does not degrade the effectiveness of the code

It improves the code by consolidating load combination requirements in a single location in the building code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

SECTION 1617

HIGH-VELOCITY HURRICANE ZONES-ROOF DRAINAGE

1617.1 Roof drainage. Where parapets or curbs are constructed above the level of the roof, provision shall be made to prevent rain water from accumulating on the roof in excess of that considered in the design, in the event the rain water drains, conductors or leaders become clogged.

1617.2 Where roofs are not designed in accordance with Section 1617.1, overflow drains or scuppers shall be placed to prevent an accumulation of more than 5 inches (927 mm) of water on any portion of the roof. In determining the load that could result should the primary drainage system be blocked, the loads caused by the depth of water (i.e., head) needed to cause the water to flow out the scuppers or secondary drainage system shall be included.

1617.3 Drains or scuppers installed to provide overflow drainage shall be not less in aggregate area than as shown in Figure 1617.3, but not less than 4 inches (102 mm) dimension in any direction and shall be placed in parapets not less than 2 inches (51 mm) nor more than 4 inches (102 mm) above the low point of the finished roofing surface and shall be located as close as practical to required vertical leaders, conductors or downspouts. The roof area to be taken in the sizing of the scuppers is the horizontal projection, except that, where a building wall extends above the roof in such a manner as to drain into the area considered, the one-half of the area of the vertical wall shall be added to the horizontal projection.

FIGURE 1617.3

REQUIRED AREA OF OVERFLOW SCUPPERS

1617.4 All roofs shall be designed with sufficient slope or camber to assure adequate drainage after the long term deflection from dead load, or shall be designed to support maximum loads including possible ponding of water caused by deflection.

1617.5 Ponding loads. Roofs shall be designed to preclude instability from ponding loads.

1617.6 Each portion of a roof shall be designed to sustain the loads of all rainwater that could accumulate on it if the primary drainage system for that portion is obstructed. Ponding instability shall be considered in this situation. If the overflow drainage provisions contain drain lines, such lines shall be independent of any primary drain lines.

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The code modification does not add a Florida specific code provision; instead, it deletes a Florida specific in order to adopt base code sections thereby attaining consistency with the base code.

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S5427

Date Submitted	7/20/2012	**Section**	1618.9	**Proponent**	Michael Goolsby
Chapter	16	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Delete HVHZ Section to adopt base code provisions

Rationale

Legislative mandate resulted in deletion of non-wind related provisions of Chapter 16 HVHZ, making necessary the utilization of base code elements related to load combinations. Single remaining HVHZ section is being removed to facilitate incorporation of Section 1605 of the base code in its entirety.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Requirements of the base code are equivalent to the deleted HVHZ section.

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

None. Requirements of the base code are equivalent to the deleted HVHZ section.

Impact to industry relative to the cost of compliance with code

None. Requirements of the base code are equivalent to the deleted HVHZ section.

Requirements

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

Yes. Removes unnecessary duplication in the HVHZ of base code provisions which are equivalent.

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

Yes. Removes unnecessary duplication in the HVHZ of base code provisions which are equivalent.

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

No, does not discriminate as all compliant installations are acceptable.

Does not degrade the effectiveness of the code

It improves the code by consolidating load combination requirements in a single location in the building code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5427 Text Modification

1618.9 Load combination. The safety of structures shall be checked using the provisions of 2.3 and 2.4 of ASCE 7 with commentary. Flood Load Fa mentioned in these load combinations shall be in accordance with Chapter 5 of ASCE 7.

Exception: Increases in allowable stress shall be permitted in accordance with ACI 530/ASCE 5/TMS 402 provided the load reduction factor of 0.75 of combinations 4 and 6 of ASCE 7 Section 2.4.1 shall not be applied.

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The code modification does not add a Florida specific code provision; instead, it deletes a Florida specific in order to adopt base code sections thereby attaining consistency with the base code.

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S5954

Date Submitted	8/1/2012	**Section**	1626.1	**Proponent**	Amanda Hickman
Chapter	16	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Adds AMCA 540 to HWHZ section of the code.

Rationale

This modification seeks to add ANSI/AMCA 540 to the HVHZ section of the Florida Building Code. AMCA 540 is an ANSI approved test standard for impacting louvers. The standard is already codified in the 2012 International Building Code and the 2010 Florida Building Code. The TAS201/203 procedures that are currently recognized in the HVHZ section of the Florida Code are designed to test windows, not louvers. The method for impact testing of louvers must be different from the method used for windows because these products are fundamentally dissimilar and not comparable. Testing louvers in the same way window assemblies are tested will not yield useful information. ANSI/AMCA 540 addresses the key differences and provides the appropriate impact test method for louvers.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Beneficial. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

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

Beneficial. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

Impact to industry relative to the cost of compliance with code

Beneficial. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

Requirements

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

Yes. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

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

Yes. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

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

No. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

Does not degrade the effectiveness of the code

No. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

General Comment - 08/09/2012 - 09/23/2012

S5954-G1

Proponent Jaime Gascon **Submitted** 9/21/2012 **Attachments** No

Comment:

The AMCA 540 version adopted in the base code does not contain the cyclic loading of TAS203. The proposed modification could be supported if it did not reduce current HVHZ requirements and the standard contained cyclic loading per Table 1625.4. AMCA 540 is not deemed equivalent to the impact requirements contained in FBC section 1626. The proposed modification reduces current requirements in the HVHZ.

S5954 Text Modification

Page: 1

SECTION 1626

HIGH-VELOCITY HURRICANE ZONES—

IMPACT TESTS FOR WIND-BORNE DEBRIS

1626.1 All parts or systems of a building or structure envelope such as, but not limited, to exterior walls, roof, outside doors, skylights, glazing and glass block shall meet impact test criteria or be protected with an external protection device that meets the impact test criteria. Test procedures to determine resistance to wind-borne debris of wall cladding, outside doors, skylights, glazing, glass block, shutters and any other external protection devices shall be performed in accordance with this section.

Exception: The following structures or portion of structures shall not be required to meet the provisions of this section:

a. Roof assemblies for screen rooms, porches, canopies, etc. attached to a building that do not breach the exterior wall or building envelope and have no enclosed sides other than screen.

b. Soffits, soffit vents and ridge vents. Size and location of such vents shall be detailed by the designer and shall not compromise the integrity of the diaphragm boundary.

c. Vents in a garage with four or fewer cars. Size and location of such vents shall be detailed by the designer and shall not exceed the minimum required area by more than 25 percent.

d. Exterior wall or roof openings for wall- or roof-mounted HVAC equipment.

e. Openings for roof-mounted personnel access roof hatches.

f. Storage sheds that are not designed for human habitation and that have a floor area of 720 square feet (67 m2) or less are not required to comply with the mandatory windborne debris impact standards of this code.

g. Louvers as long as they properly considered ASCE 7 in the design of the building or have been tested to ANSI/AMCA 540 Test Method for Louvers Impacted by Wind Borne Debris.

h. Buildings and structures for marinas, cabanas, swimming pools, and greenhouses.

i. Exterior balconies or porches under existing roofs or decks enclosed with screen or removable vinyl and acrylic panels complying with Section 1622.1or Section 1622.2 shall not be required to be protected and openings in the wall separating the unit from the balcony or porch shall not be required to be protected unless required by other provisions of this code.

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Date Submitted	8/1/2012	**Section**	1626.1	**Proponent**	Amanda Hickman
Chapter	16	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

5954

Summary of Modification

Adds AMCA 540 to HWHZ section of the code and clarifies language.

Rationale

This modification seeks to add ANSI/AMCA 540 to the HVHZ section of the Florida Building Code and also to clarify the intent of the section. AMCA 540 is an ANSI approved test standard for impacting louvers. The standard is already codified in the 2012 International Building Code and the 2010 Florida Building Code. The TAS201/203 procedures that are currently recognized in the HVHZ section of the Florida Code are designed to test windows, not louvers. The method for impact testing of louvers must be different from the method used for windows because these products are fundamentally dissimilar and not comparable. Testing louvers in the same way window assemblies are tested will not yield useful information. ANSI/AMCA 540 addresses the key differences and provides the appropriate impact test method for louvers.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Beneficial. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

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

Beneficial. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

Impact to industry relative to the cost of compliance with code

Beneficial. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

Requirements

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

Yes. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

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

Yes. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

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

No. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

Does not degrade the effectiveness of the code

No. Provision already exists in the 2010 FL code and in the 2012 IBC. This mod provides users with an additional and more appropriate option for impact testing of louvers in HWHZ areas of Florida.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

General Comment - 08/09/2012 - 09/23/2012

S5955-G1

Proponent Jaime Gascon **Submitted** 9/21/2012 **Attachments** No

Comment:

The AMCA 540 version adopted in the base code does not contain the cyclic loading of TAS203. The proposed modification could be supported if it did not reduce current HVHZ requirements and the standard contained cyclic loading per Table 1625.4. AMCA 540 is not deemed equivalent to the impact requirements contained in FBC section 1626. The proposed modification reduces current requirements in the HVHZ.

S5955 Text Modification

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SECTION 1626

HIGH-VELOCITY HURRICANE ZONES—

IMPACT TESTS FOR WIND-BORNE DEBRIS

1626.1 All parts or systems of a building or structure envelope such as, but not limited, to exterior walls, roof, outside doors, skylights, glazing and glass block shall meet impact test criteria or be protected with an external protection device that meets the impact test criteria. Test procedures to determine resistance to wind-borne debris of wall cladding, outside doors, skylights, glazing, glass block, shutters and any other external protection devices shall be performed in accordance with this section.

Exception: The following structures or portion of structures shall not be required to meet the provisions of this section:

a. Roof assemblies for screen rooms, porches, canopies, etc. attached to a building that do not breach the exterior wall or building envelope and have no enclosed sides other than screen.

b. Soffits, soffit vents and ridge vents. Size and location of such vents shall be detailed by the designer and shall not compromise the integrity of the diaphragm boundary.

c. Vents in a garage with four or fewer cars. Size and location of such vents shall be detailed by the designer and shall not exceed the minimum required area by more than 25 percent.

d. Exterior wall or roof openings for wall- or roof-mounted HVAC equipment.

e. Openings for roof-mounted personnel access roof hatches.

f. Storage sheds that are not designed for human habitation and that have a floor area of 720 square feet (67 m2) or less are not required to comply with the mandatory windborne debris impact standards of this code.

g. Louvers, ~~as long as~~ provided they have been properly selected ~~considered ASCE 7 in~~ for the design of the building in accordance with ASCE 7, or have been tested to AMCA 540 Test Method for Louvers Impacted by Wind Borne Debris.

h. Buildings and structures for marinas, cabanas, swimming pools, and greenhouses.

i. Exterior balconies or porches under existing roofs or decks enclosed with screen or removable vinyl and acrylic panels complying with Section 1622.1or Section 1622.2 shall not be required to be protected and openings in the wall separating the unit from the balcony or porch shall not be required to be protected unless required by other provisions of this code.

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S5253

Date Submitted	7/20/2012	**Section**	1626.2	**Proponent**	Jaime Gascon
Chapter	16	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Correlation to TAS201 and TAS203 and specify large missile speeds for essential facilities - Building Category IV.

Rationale

Risk Category IV – Essential facilities in the non-HVHZ section require these missile types and speed for wind zone 4 in ASTM E1996. Since TAS201 and TAS203 are the applicable impact test procedures for use in the HVHZ, these missile types and speed need to be specified for this category of building or structure.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Minimal impact since all that would be required is training to know that this is the requirement for essential facilities.

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

Impact is substantial, but offset by the survivability of the structure in being fully operational after a storm event. A substantially higher impact would be expected if the “essential” building or structure is not operational after the storm due to an envelope failure.

Impact to industry relative to the cost of compliance with code

An increase is expected for products installed from grade to 30’ since missile criterion is more stringent. Products need to be stouter to resist the higher energy impacts. Products installed at higher than 30’ can use the same products that already meet the HVHZ standard large missile.

Requirements

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

This MOD’s goal is to have essential facilities operational after a storm. Communities depend on the emergency services typically rendered in these buildings, and expect them to be operational after a storm. Failure would have a direct connection with the public’s health and welfare.

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

This modification improves the code by providing an established level of protection corresponding to the designated risk category of the building or structure.

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

The modification does not discriminate since it allows the use of any system that meets the testing requirements for the given application.

Does not degrade the effectiveness of the code

This modification enhances the code by acknowledging and establishing parameters that applicable to this unique category of buildings and structures.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1626.2 Large missile impact tests.

1626.2.1 This test shall be conducted on three test specimens per test protocols TAS201 and TAS203. This test shall be applicable to the construction units, assemblies and materials to be used up to and including 30 feet (9.1 m) in height in any and all structures.

1626.2.2 The test specimens shall consist of the entire assembled unit, including frame and anchorage as supplied by the manufacturer for installation in the building, or as set forth in a referenced specification, if applicable. Fasteners used in mounting the test specimen shall be identical in size and spacing to what is used in field installations.

1626.2.3 The large missile shall be comprised of a piece of timber having nominal dimensions of 2 inches by 4 inches (51 mm by 102 m) weighing 9 pounds (4.1 kg).

1626.2.4 The large missile shall impact the surface of each test specimen at a speed of 50 feet per second (15.2 m/s); 80 feet per second (24.38 m/s) for Risk Category IV - Essential Facility buildings or structures.

1626.2.5 Each test specimen shall receive two impacts except as noted in Sections 1626.2.5.1 and 1626.2.5.2, the first within a 5-inch (127 mm) radius circle having its center on the midpoint of the test specimen and the second within a 5-inch (127 mm) radius circle in a corner having its center in a location 6 inches (152 mm) away from any supporting members.

...

1626.3 Small missile impact test.

1626.3.1 This test shall be conducted on three test specimens per test protocols TAS201 and TAS203. This test shall be applicable to the construction units, assemblies, and materials to be used above 30 feet (9.1 m) in height in any and all structures~~-~~: Risk Category IV - Essential Facility buildings or structures shall follow the large missile impact testing in section 1626.2.4 at 50 feet per second (15.2 m/s).

1626.3.2 Each test specimen shall consist of the entire assembled unit, including frame and anchorage as supplied by the manufacturer for installation in the building, or as set forth in a referenced specification, if applicable. The fasteners used in mounting the test specimen shall be identical in size and spacing to those to be used in field installations.

1626.3.3 The missiles shall consist of solid steel balls each having a mass of 2 grams (0.07 oz) (+/-5 percent) with a 5/16-in. (7.9 mm) nominal diameter.

1626.3.4 Each missile shall impact the surface of each test specimen at a speed of 130 feet per second (40 m/s).

1626.3.5 Each test specimen shall receive 30 small missile impacts except as noted in Sections 1626.3.5.1 and 1626.3.5.2 delivered in groups of 10 at a time: the first 10 distributed uniformly over a 2 square foot (0.19 m2) area located at the center of the test specimen, the second 10 distributed uniformly over a 2 square foot area (0.19 m2) located at the center of the long dimension of the specimen near the edge, and the third 10 distributed uniformly over a 2 square foot (0.19 m2) area located at a corner of the specimen.

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Date Submitted	7/29/2012	**Section**	Table 1604.3	**Proponent**	Joseph Belcher
Chapter	16	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Adds screen enclosures to table; adds oercebtage if solids for screen walls.

Rationale

The changes to the table addressing deflection for screen enclosures have been in the code since the first edition. The changes are a part of a series of changes incorporating requirements of the ADM (deflection criteria) and wind tunnel testing commissioned by the Aluminum Association of Florida and conducted by Dr. Timothy Reinhold, PE, PhD, at Clemson and Virginia Tech wind tunnels and Charley Everly, PE. The provisions are field tested and effective.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impacts to local entity relative to enforcement of code as the provisions are currently in effect and have been in effect for ten years. No new requirements created

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

No impacts to building and property owners as the provisions are currently in effect. No new requirements created.

Impact to industry relative to the cost of compliance with code

No impacts to industry as the provisions are currently in effect. No new requirements created.

Requirements

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

Bringing the provisions forward improves safety and welfare of the general public by establishing criteria for the design of screen enclosures.

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

Bringing the provision forward improves the code by establishing criteria for the design of screen enclosures.

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

The proposed amendment does not discriminate.

Does not degrade the effectiveness of the code

Improves the effectiveness of the code by adopting nationally recognized deflection criteria for screen enclosures.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

S5729 Text Modification

Table 1604.3 Deflection Limits, change notes below table to read as shown:

Page: 1

TABLE 1604.3
DEFLECTION LIMITSa, b, c, h, i

CONSTRUCTION	L	S or Wf	D + Ld, g, j
of members:e			
pporting plaster or stucco ceiling	l/360	l/360	l/240
pporting nonplaster ceiling	l/240	l/240	l/180
t supporting ceiling	l/180	l/180	l/120
embers supporting screen surface	—	—	l/60
or members	l/360	—	l/240
terior walls and interior partitions:			
th plaster or stucco finishes	—	l/360	—
th other brittle finishes	—	l/240	—
th flexible finishes	—	l/120	—
m buildings	—	—	l/180
eenhouses	—	—	l /120

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed *l*/60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed *l*/150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed *l*/90. For roofs, this exception only applies when the metal sheets have no roof covering.

b. Interior partitions not exceeding 6 feet in height and flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607.14.

c. See Section 2403 for glass supports.

d. For wood structural members having a moisture content of less than 16 percent at time of installation and used under dry conditions, the deflection resulting from $L + 0.5D$ is permitted to be substituted for the deflection resulting from $L + D$.

e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to assure adequate drainage shall be investigated for ponding. See Section 1611 for rain and ponding requirements and Section 1503.4 for roof drainage requirements.

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f. The wind load is permitted to be taken as 0.42 times the "component and cladding" loads for the purpose of determining deflection limits herein.

g. For steel structural members, the dead load shall be taken as zero.

h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers, not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed *l*/60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed *l*/175 for each glass lite or *l*/60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed *l*/120.

i. For cantilever members, *l* shall be taken as twice the length of the cantilever.

j. Screen surfaces shall be permitted to include a maximum of 25% solid flexible finishes.

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The base code definition does not address screen enclosures adequately and they are a common structure throughout Florida. The provisions are the result of scientific investigation specifically geared toward developing criteria for the construction of wind resistant screen enclosures. The fact that there are so many screen enclosures constructed in Florida and that the entire state is a hurricane prone region merits Florida specific provisions for the design of such structures.

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S5729 Prior Code Version question. submitted or attempted to be included

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

The provisions were submitted in the past and rejected in the International Building Code. A number of the provisions have been adopted as an appendix in the International Residential Code Appendix H. The Commission does not adopt appendices.

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Date Submitted	8/1/2012	**Section**	Table 1604.5	**Proponent**	Joseph Belcher
Chapter	16	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Retains screen enclosures as low hazard to humn life.

Rationale

The changes to the table addressing Risk Category for screen enclosures has been in the code since the 2010 Edition and under the former table (Occupancy Classification) since the 2001 Edition. The change is part of a series of changes incorporating requirements for screen enclosures based on wind tunnel testing and engineering analysis commissioned by the Aluminum Association of Florida and conducted by Dr. Timothy Reinhold, PE, PhD, at Clemson and Virginia Tech wind tunnels and Charley Everly, PE. The provisions are field tested and effective. I should go without saying that screen enclosures present a low hazard to human life in the event of a failure.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impacts to local entity relative to enforcement of code as the provisions are currently in effect as part of update to ASCE 7-2010and under the former table (Occupancy Classification) since the 2001 Edition. No new requirements created.

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

No impacts to owners relative to compliance with thecode as the provisions are currently in effect as part of update to ASCE 7-201 and under the former table (Occupancy Classification) since the 2001 Edition. No new requirements created.

Impact to industry relative to the cost of compliance with code

No impacts to industry relative to compliance with thecode as the provisions are currently in effect as part of update to ASCE 7-201 and under the former table (Occupancy Classification) since the 2001 Edition. No new requirements created.

Requirements

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

Bringing the provisions forward improves safety and welfare of the general public by establishing criteria for the design of screen enclosures.

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

Bringing the definition forward improves the code by establishing criteria for the design of screen enclosures.

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

The proposed amendment does not discriminate.

Does not degrade the effectiveness of the code

Improves the effectiveness of the code by adopting nationally recognized deflection criteria for screen enclosures.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5949 Text Modification

Page: 1

TABLE 1604.5
RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES

RISK CATEGORY	NATURE OF OCCUPANCY
I	Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to: • Agricultural facilities. • Certain temporary facilities. • Minor storage facilities. • Screen enclosures.
II	Buildings and other structures except those listed in Risk Categories I, III and IV
III	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to: • Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300. • Buildings and other structures containing elementary school, secondary school or day care facilities with an occupant load greater than 250. • Buildings and other structures containing adult education facilities, such as colleges and universities, with an occupant load greater than 500. • Group I-2 occupancies with an occupant load of 50 or more resident care recipients but not having surgery or emergency treatment facilities. • Group I-3 occupancies. • Any other occupancy with an occupant load greater than 5,000a. • Power-generating stations, water treatment facilities for potable water, waste water treatment facilities and other public utility facilities not included in Risk Category IV. • Buildings and other structures not included in Risk Category IV containing quantities of toxic or explosive materials that: Exceed maximum allowable quantities per control area as given in Table 307.1(1) or 307.1(2) or per outdoor control area in accordance with the ~~*International*~~ *Florida Fire Prevention Code*; and Are sufficient to pose a threat to the public if releasedb.
IV	Buildings and other structures designated as essential facilities, including but not limited to: • Group I-2 occupancies having surgery or emergency treatment facilities.

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	• Fire, rescue, ambulance and police stations and emergency vehicle garages. • Designated earthquake, hurricane or other emergency shelters. • Designated emergency preparedness, communications and operations centers and other facilities required for emergency response. • Power-generating stations and other public utility facilities required as emergency backup facilities for Risk Category IV structures. • Buildings and other structures containing quantities of highly toxic materials that: Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the ~~*International*~~ *Florida Fire Prevention Code*; and Are sufficient to pose a threat to the public if releasedb. • Aviation control towers, air traffic control centers and emergency aircraft hangars. • Buildings and other structures having critical national defense functions. • Water storage facilities and pump structures required to maintain water pressure for fire suppression.

a. For purposes of occupant load calculation, occupancies required by Table 1004.1.2 to use gross floor area calculations shall be permitted to use net floor areas to determine the total occupant load.

b. Where approved by the building official, the classification of buildings and other structures as Risk Category III or IV based on their quantities of toxic, highly toxic or explosive materials is permitted to be reduced to Risk Category II, provided it can be demonstrated by a hazard assessment in accordance with Section 1.5.3 of ASCE 7 that a release of the toxic, highly toxic or explosive materials is not sufficient to pose a threat to the public.

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The base code definition does not address screen enclosures adequately and they are a common structure throughout Florida. The provisions are the result of scientific investigation specifically geared toward developing criteria for the construction of wind resistant screen enclosures. The fact that there are so many screen enclosures constructed in Florida and that the entire state is a hurricane prone region merits Florida specific provisions for the design of such structures.

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S5949 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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Date Submitted	7/20/2012	**Section**	Table 1607.1 footnotes	**Proponent**	Michael Goolsby
Chapter	16	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

With the elimination of Chapter 16 HVHZ sections, formatting of certain base code sections becomes necessary. Where Chapter 16 sections give guidance to sections not applicable in the HVHZ, those sections must be modified to also contain direction to the equivalent HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions not utilized in HVHZ, requiring direction through formatting to relevant HVHZ sections.

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

None. Base code provisions not utilized in HVHZ, requiring direction through formatting to relevant HVHZ sections.

Impact to industry relative to the cost of compliance with code

None. Base code provisions not utilized in HVHZ, requiring direction through formatting to relevant HVHZ sections.

Requirements

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary direction to applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

TABLE 1607.1

MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, Lo, AND

MINIMUM CONCENTRATED LIVE LOADSg

For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm2,

1 square foot = 0.0929 m2,

1 pound per square foot = 0.0479 kN/m2, 1 pound = 0.004448 kN,

1 pound per cubic foot = 16 kg/m3.

a. Floors in garages or portions of buildings used for the storage of motor vehicles shall be designed for the uniformly distributed live loads of Table

1607.1 or the following concentrated loads: (1) for garages restricted to passenger vehicles accommodating not more than nine passengers, 3,000 pounds acting on an area of 4.5 inches by 4.5 inches; (2) for mechanical parking structures without slab or deck that are used for storing passenger vehicles only, 2,250 pounds per wheel.

b. The loading applies to stack room floors that support nonmobile, doublefaced library book stacks, subject to the following limitations:

1. The nominal bookstack unit height shall not exceed 90 inches;

2. The nominal shelf depth shall not exceed 12 inches for each face; and

3. Parallel rows of double-faced book stacks shall be separated by aisles not less than 36 inches wide.

c. Design in accordance with ICC 300.

d. Other uniform loads in accordance with an approved method containing provisions for truck loadings shall also be considered where appropriate.

e. The concentrated wheel load shall be applied on an area of 4.5 inches by 4.5 inches.

f. The minimum concentrated load on stair treads shall be applied on an area of 2 inches by 2 inches. This load need not be assumed to act concurrently with the uniform load.

g. Where snow loads occur that are in excess of the design conditions, the structure shall be designed to support the loads due to the increased loads caused by drift buildup or a greater snow design determined by the building official (see Section 1608).

h. See Section 1604.8.3 (HVHZ shall comply with Section 1616.5) for decks attached to exterior walls.

i. Uninhabitable attics without storage are those where the maximum clear height between the joists and rafters is less than 42 inches, or where there are not two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses. This live load need not be assumed to act concurrently with any other live load requirements.

j. Uninhabitable attics with storage are those where the maximum clear height between the joists and rafters is 42 inches or greater, or where there are two or more adjacent trusses with web configurations capable of

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accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses.

The live load need only be applied to those portions of the joists or truss bottom chords where both of the following conditions are met:

i. The attic area is accessible from an opening not less than 20 inches in width by 30 inches in length that is located where the clear height in the attic is a minimum of 30 inches; and

ii. The slopes of the joists or truss bottom chords are no greater than two units vertical in 12 units horizontal.

The remaining portions of the joists or truss bottom chords shall be designed for a uniformly distributed concurrent live load of not less than

10 lb./ft2.

k. Attic spaces served by stairways other than the pull-down type shall be designed to support the minimum live load specified for habitable attics and sleeping rooms.

l. Areas of occupiable roofs, other than roof gardens and assembly areas, shall be designed for appropriate loads as approved by the building official. Unoccupied landscaped areas of roofs shall be designed in accordance with Section 1607.12.3.

m.Live load reduction is not permitted unless specific exceptions of Section 1607.10 apply.

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S5610

Date Submitted	7/24/2012	**Section**	Table 1609.1.2	**Proponent**	T Stafford
Chapter	16	**Affects HVHZ**	No	**Attachments**	No

General Comments No

Alternate Language No

Related Modifications

Summary of Modification

Correlation with wind speeds in ASCE 7-10.

Rationale

This language is currently contained in the 2010 FBC. No new requirements are being proposed. The language clarifies the wind speed limitations in the notes of the table that are already established in the charging language for this table.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

This proposal is simply a correlation. The proposed language makes the limitations of the notes to the table consistent with the charging language referencing this table.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

TABLE 1609.1.2
WIND-BORNE DEBRIS PROTECTION FASTENING SCHEDULE FOR WOOD STRUCTURAL PANELS[a, b, c, d]

(no change to table)

a. This table is based on a Vasd determined in accorance with Section 1609.3.1, of 140 mph ~~wind speeds~~ and a 45-foot mean roof height.
b. (no change)
c. (no change)
d. (no change)

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S5611

Date Submitted	7/27/2012	**Section**	Table 1609.1.2	**Proponent**	T Stafford
Chapter	16	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Correlation with wind speeds in ASCE 7-10.

Rationale

This language is currently contained in the 2010 FBC. No new requirements are being proposed. The language clarifies the wind speed limitations in the notes of the table that are already established in the charging language for this table.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

This proposal neither weakens nor strengthens the code. It is simply a clarification.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

TABLE 1609.1.2
WIND-BORNE DEBRIS PROTECTION FASTENING SCHEDULE FOR WOOD STRUCTURAL PANELS[a, b, c, d]

(no change to table)

a. This table is based on a Vasd determined in accorance with Section 1609.3.1, of 140 mph ~~wind speeds~~ and a 45-foot mean roof height.
b. (no change)
c. (no change)
d. (no change)

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S5324

Date Submitted	7/19/2012	**Section**	1702, 1710.5.3	**Proponent**	Joseph Hetzel
Chapter	17	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Inclusion of garage door labeling language.

Rationale

Language carried over from the 2010 Code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Continues improved efficiency in enforcing the Code.

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

No adverse impact.

Impact to industry relative to the cost of compliance with code

No adverse impact.

Requirements

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

Contributes to public health, safety and welfare by clarifying garage door labeling requirements.

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

Preserves improvement of the code.

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5324 Text Modification

Page: 1

Add the following definition to Section 1702:

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

Add the following language:

1710.5.3 Garage door labeling. Garage doors shall be labeled with a permanent label provided by the garage door manufacturer. The label shall identify the garage door manufacturer, the garage door model/series number, the positive and negative design pressure rating, indicate impact rated if applicable, the installation instruction drawing reference number, the Florida Product Approval or Miami-Dade Product Approval number if applicable, and the applicable test standards.

The required garage door components for an approved garage door assembly may be indicated using a checklist form on the label. If a checklist format is used on the label, the door installer or the garage door manufacturer shall mark the selected components on the checklist that are required to assemble an approved garage door system.

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S5149

Date Submitted	7/16/2012	**Section**	1702-09 Definitions	**Proponent**	Suzanne Davis
Chapter	17	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code.

Rationale

To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code. Traditionally, the Commission has reserved these sections. The threshold criteria covers these sections which are already in the FBC.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Currently used under the 2010 Code, no new requirements being established

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

Currently used under the 2010 Code, no new requirements being established

Impact to industry relative to the cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Requirements

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

Does not degrade the effectiveness of the code

Carried over from the previous, field tested and proven to be effective

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code. Traditionally, the Commission has reserved these sections. The threshold criteria covers these sections which are already in the FBC.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

Chapter 17 Special Inspection and Tests

Section 1702, reserve the following definitions.

Special Inspection. Reserved.

Special Inspector. Reserved.

Structural Observation. Reserved.

Section 1703 Approvals.

1703.6.1 Follow-up inspection. Change to read as shown.

1703.6.1 Follow-up inspection. Reserved.

Section 1704 Special Inspections. Change to read as shown.

Section 1704 Special Inspections. Reserved

Section 1705 Statement of Special Inspections. Change to read as shown.

Section 1705 Statement of Special Inspections. Reserved

Section 1706 Special Inspection for Wind Requirements. Change to read as shown.

Section 1706 Special Inspection for Wind Requirements. Reserved

Section 1707 Special Inspection for Seismic Resistance. Change to read as shown.

Section 1707 Special Inspection for Seismic Resistance. Reserved

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Section 1708 Structural Testing for Seismic Resistance. Change to read as shown.

Section 1708 Structural Testing for Seismic Resistance. Reserved

Section 1709 Structural Observations. Change to read as shown.

Section 1709 Structural Observations. Reserved

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S5024

Date Submitted	7/9/2012	**Section**	1710 & 1711	**Proponent**	Jaime Gascon
Chapter	17	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Reinstates all the exterior window and door assemblies' structural performance and standards from the 2010 FBC that are applicable to the HVHZ and are structural wind-related.

Rationale

Reinstatement of these provisions will allow continued use of products that have already demonstrated performance to these national standards under the provisions and parameters herein re-introduced. Manufacturers that have tested and qualified their systems under Florida's State and Local product approval rule to these test standards and material specifications would be allowed to continue using them without having to retest.

Further, since chapter 17 in earlier editions of the FBC integrated the HVHZ provisions and did not have a stand-alone section for HVHZ, it was inadvertently not included as non-sunset provision when establishing the base code for the 2013 FBC.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions have been enforced locally since 1994.

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

Reinstatement of these sections in the code has a net cost savings. Not having to retest products or evaluate them to different criteria saves costs. Further, not having the prescribed instruction for these products results in a less effective code which has the potential to drive up costs.

Impact to industry relative to the cost of compliance with code

The industry would be spared from additional costs by not having to retest or re-evaluate their products. Also, these clarifications in the code it makes compliance easier, which translates into cost and time savings.

Requirements

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

This modification reinstates HVHZ provisions that were not to subject to the sun-set provisions of the legislature. Therefore, helps protect the health and welfare of the public by having the wind provisions for these products remain in the base code.

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

This modification improves the code by reinstating an inadvertently removed wind provisions that have existed in the Florida Code since inception.

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

The modification does not discriminate since it allows the use of any products that show proof of meeting the code established standards.

Does not degrade the effectiveness of the code

This modification enhances the code by reinstating specific wind provisions for HVHZ products that were not carried forward in establishing the base code for the 2013 FBC. Reinstatement of these provisions helps bring uniformity to the testing and evaluation of these products.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

These wind provisions were acknowledged to be unique to Florida by the Florida Legislature, and were not intended to subset since they are structural wind related and applicable in the HVHZ.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

SECTION 1710 PRECONSTRUCTION LOAD TESTS

1710.1 General.
In evaluating the physical properties of materials and methods of construction that are not capable of being designed by *approved* engineering analysis or do not comply with the applicable referenced standards, the structural adequacy shall be predetermined based on the load test criteria established in this section.

1710.2 Load test procedures specified.
Where specific load test procedures, load factors and acceptance criteria are included in the applicable referenced standards, such test procedures, load factors and acceptance criteria shall apply. In the absence of specific test procedures, load factors or acceptance criteria, the corresponding provisions in Section 1710.3 shall apply.

1710.3 Load test procedures not specified.
Where load test procedures are not specified in the applicable referenced standards, the load-bearing and deformation capacity of structural components and assemblies shall be determined on the basis of a test procedure developed by a *registered design professional* that simulates applicable loading and deformation conditions. For components and assemblies that are not a part of the seismic force-resisting system, the test shall be as specified in Section 1710.3.1. Load tests shall simulate the applicable loading conditions specified in Chapter 16.

1710.3.1 Test procedure.
The test assembly shall be subjected to an increasing superimposed load equal to not less than two times the superimposed design load. The test load shall be left in place for a period of 24 hours. The tested assembly shall be considered to have successfully met the test requirements if the assembly recovers not less than 75 percent of the maximum deflection within 24 hours after the removal of the test load. The test assembly shall then be reloaded and subjected to an increasing superimposed load until either structural failure occurs or the superimposed load is equal to two and one-half times the load at which the deflection limitations specified in Section 1710.3.2 were reached, or the load is equal to two and one-half times the superimposed design load. In the case of structural components and assemblies for which deflection limitations are not specified in Section 1710.3.2, the test specimen shall be subjected to an increasing superimposed load until structural failure occurs or the load is equal to two and one-half times the desired superimposed design load. The allowable superimposed design load shall be taken as the lesser of:

1. The load at the deflection limitation given in Section 1710.3.2.

2. The failure load divided by 2.5.

3. The maximum load applied divided by 2.5.

1710.3.2 Deflection.
The deflection of structural members under the design load shall not exceed the limitations in Section 1604.3. The HVHZ shall comply with Section 1616.3.1.

1710.4 Wall and partition assemblies.
Load-bearing wall and partition assemblies shall sustain the test load both with and without window framing. The test load shall include all design load components. Wall and partition assemblies shall be tested both with and without door and window framing.

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1710.5 Exterior window and door assemblies.
The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1710.5.1 or 1710.5.2.

Exception:
Structural wind load design pressures for window units smaller than the size tested in accordance with Section 1710.5.1 or 1710.5.2 shall be permitted to be higher than the design value of the tested unit provided such higher pressures are determined by accepted engineering analysis or sections 1710.5.3 or 1710.5.4. All components of the small unit shall be the same as the tested unit. Where such calculated design pressures are used, they shall be validated by an additional test of the window unit having the highest allowable design pressure.

1710.5.1 Exterior windows and doors.
Exterior windows and sliding doors shall be tested and labeled as conforming to AAMA/WDMA/CSA101/I.S.2/A440 or TAS202 (HVHZ shall comply with TAS202 utilizing ASTM E 1300 or Section 2404). The *label* shall state the name of the manufacturer, the *approved* labeling agency and the product designation as specified in AAMA/WDMA/CSA101/I.S.2/A440. Exterior side-hinged doors shall be tested and *labeled* as conforming to AAMA/WDMA/CSA101/I.S.2/A440 or comply with Section 1710.5.2 or TAS202 (HVHZ shall comply with TAS202). Products tested and labeled as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 or TAS202 shall not be subject to the requirements of Sections 2403.2 and 2403.3.

1710.5.2 Exterior windows and door assemblies not provided for in Section 1710.5.1.
Exterior window and door assemblies shall be tested in accordance with ASTM E 330. HVHZ shall comply with TAS202. Structural performance of garage doors and rolling doors shall be determined in accordance with either ASTM E 330 or ANSI/DASMA 108, and shall meet the acceptance criteria of ANSI/DASMA 108. HVHZ shall comply with TAS202. Exterior window and door assemblies containing glass shall comply with Section 2403. The design pressure for testing shall be calculated in accordance with Chapter 16. Each assembly shall be tested for 10 seconds at a load equal to 1.5 times the design pressure (HVHZ shall comply with TAS202).

Exception:

1. Door assemblies installed in nonhabitable areas where the door assembly and area are designed to accept water infiltration, need not be tested for water infiltration.

2. Door assemblies installed where the overhang (OH) ratio is equal to or more than 1 need not be tested for water infiltration. The overhang ratio shall be calculated by the following equation:

OH ratio = OH Length/OH Height

where:

OH Length = The horizontal measure of how far an overhang over a door projects out from the door's surface.

OH Height = The vertical measure of the distance from the door's sill to the bottom of the overhang over a door.

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1710.5.3 Comparative analysis of operative windows and glazed doors may be made, provided the proposed unit complies with the following:

1. Shall always be compared with a tested and currently approved unit.

2. Varies only in width, height and/or load requirements.

3. Shall not exceed 100 percent of the proportional deflection for fiber stress of the intermediate members of the approved unit.

4. Shall conform as to extruded members, reinforcement and in all other ways with the tested approved unit.

5. Shall not exceed 100 percent of the concentrated load at the juncture of the intermediate members and the frame of the approved unit.

6. Shall not permit more air and water infiltration than the approved unit based on the height above grade.

7. Compared unit shall not exceed the maximum cyclic pressure when tested per TAS201 and TAS 203 or ASTM E 1886 and ASTM E 1996.

1710.5.4 Comparative analysis of fixed glass windows may be made provided the proposed unit complies with the following:

1. Shall always be compared with a tested and currently approved unit.

2. Varies only in width, height and/or load requirements.

3. The design is identical in all respects. e.g., extrusions, glazing system, joinery, fasteners, etc.

4. Shall not permit more air and water infiltration than the approved unit based on height above grade.

5. The maximum uniform load distribution (ULD) of any side is equal to the uniform load carried by the side divided by the length of the side.

6. The ULD of any member must not exceed the ULD of the corresponding member of the tested window.

7. The uniform load distribution on each member shall be calculated in accordance to Section 2, Engineering Design Rules, of the AAMA 103.3 Procedural Guide.

8. Compared unit shall not exceed the maximum cyclic pressure when tested per TAS 201 and TAS 203 or ASTM E 1886 and ASTM E 1996.

1710.5.5 Mullions. Mullions or mulled fenestration assemblies shall be tested by an approved testing laboratory in accordance with either ASTM E 330, or TAS 202 (HVHZ shall comply with TAS 202), or shall be engineered using accepted engineering practice. Mullions tested as stand-alone units or qualified by engineering shall use performance criteria cited in Sections 1710.5.5.1, 1710.5.5.2 and 1710.5.5.3.

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1710.5.5.1 Load transfer. Mullions shall be designed to transfer the design pressure loads applied by the window and door assemblies to the rough opening substrate.

1710.5.5.2 Deflection. Mullions shall be capable of resisting the design pressure loads applied by the window and door assemblies to be supported without deflecting more than L/175, where L is the span of the mullion in inches.

1710.5.5.3 Structural safety factor. Mullions that are tested by an approved testing laboratory shall be capable of resisting a load of 1.5 times the design pressure loads applied by the window and door assemblies to be supported. Mullions that are qualified by engineering shall be capable of resisting the design pressure loads applied by the window and door assemblies to be supported without exceeding the allowable stress of the mullion elements.

1710.5.6 Glazed curtain wall, window wall and storefront systems shall be tested in accordance with the requirements of this section and the Laboratory Test requirements of the American Architectural Manufacturers Association (AAMA) Standard 501, HVHZ shall comply with Section 2411.3.2.1.1.

1710.6 Skylights and sloped glazing.
Unit skylights and tubular daylighting devices (TDDs) shall comply with the requirements of Section 2405. All other skylights and sloped glazing shall comply with the requirements of Chapter 24. All skylights and sloped glazing in the HVHZ shall comply with TAS202.

1710.7 Test specimens.
Test specimens and construction shall be representative of the materials, workmanship and details normally used in practice. The properties of the materials used to construct the test assembly shall be determined on the basis of tests on samples taken from the load assembly or on representative samples (when TAS202 is used, a minimum of three specimens) of the materials used to construct the load test assembly. Required tests shall be conducted or witnessed by an *approved agency*.

SECTION 1711 MATERIAL AND TEST STANDARDS

1711.1 Joist hangers.
Testing of joist hangers shall be in accordance with Sections 1711.1.1 through 1711.1.3, as applicable.

1711.1.1 General.
The vertical load-bearing capacity, torsional moment capacity and deflection characteristics of joist hangers shall be determined in accordance with ASTM D 1761 using lumber having a specific gravity of 0.49 or greater, but not greater than 0.55, as determined in accordance with AF&PA NDS for the joist and headers.

Exception: The joist length shall not be required to exceed 24 inches (610 mm).

1711.1.2 Vertical load capacity for joist hangers.
The vertical load-bearing capacity for the joist hanger shall be determined by testing a minimum of three joist hanger assemblies as specified in ASTM D 1761. If the ultimate vertical load for any one of the tests varies more

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than 20 percent from the average ultimate vertical load, at least three additional tests shall be conducted. The allowable vertical load-bearing of the joist hanger shall be the lowest value determined from the following:

1. The lowest ultimate vertical load for a single hanger from any test divided by three (where three tests are conducted and each ultimate vertical load does not vary more than 20 percent from the average ultimate vertical load).

2. The average ultimate vertical load for a single hanger from all tests divided by three (where six or more tests are conducted).

3. The average from all tests of the vertical loads that produce a vertical movement of the joist with respect to the header of $^{1}/_{8}$ inch (3.2 mm).

4. The sum of the allowable design loads for nails or other fasteners utilized to secure the joist hanger to the wood members and allowable bearing loads that contribute to the capacity of the hanger.

5. The allowable design load for the wood members forming the connection.

1711.1.2.1 Design value modifications for joist hangers.
Allowable design values for joist hangers that are determined by Item 4 or 5 in Section 1711.1.2 shall be permitted to be modified by the appropriate load duration factors as specified in AF&PA NDS but shall not exceed the direct loads as determined by Item 1, 2 or 3 in Section 1711.1.2. Allowable design values determined by Item 1, 2 or 3 in Section 1711.1.2 shall not be modified by load duration factors.

1711.1.3 Torsional moment capacity for joist hangers.
The torsional moment capacity for the joist hanger shall be determined by testing at least three joist hanger assemblies as specified in ASTM D 1761. The allowable torsional moment of the joist hanger shall be the average torsional moment at which the lateral movement of the top or bottom of the joist with respect to the original position of the joist is $^{1}/_{8}$ inch (3.2 mm).

1711.2 Concrete and clay roof tiles.
Testing of concrete and clay roof tiles shall be in accordance with Sections 1711.2.1 and 1711.2.2, as applicable.

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1711.2.1 Overturning resistance.
Concrete and clay roof tiles shall be tested to determine their resistance to overturning due to wind in accordance with SBCCI SSTD 11 or TAS 108 (high-velocity hurricane zones shall comply with TAS 108)and Chapter 15.

1711.2.2 Wind tunnel testing.
Where concrete and clay roof tiles do not satisfy the limitations in Chapter 16 for rigid tile, a wind tunnel test shall be used to determine the wind characteristics of the concrete or clay tile roof covering in accordance with SBCCI SSTD 11 or TAS 108 (high-velocity hurricane zones shall comply with TAS 108) and Chapter 15.

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S5325

Date Submitted	7/19/2012	**Section**	1710.5.2	**Proponent**	Joseph Hetzel
Chapter	17	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Clarifies test requirements for sectional garage doors and rolling doors.

Rationale

Continues specific sectional garage door and rolling door test requirements from the 2010 Code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Continues improved efficiency in enforcing the code.

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

No adverse impact.

Impact to industry relative to the cost of compliance with code

No adverse impact.

Requirements

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

Contributes to public health, safety and welfare by clarifying test requirements applying to sectional garage doors and rolling doors.

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

Preserves improvement of the code.

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

Revise the language in 1710.5.2 as follows:

1710.5.2 Exterior windows and door assemblies not provided for in Section 1710.5.1.

Exterior window and door assemblies shall be tested in accordance with ASTM E 330. ~~Structural performance of garage doors and rolling doors shall be determined in accordance with either ASTM E 330 or ANSI/DASMA 108, and shall meet the acceptance criteria of ANSI/DASMA 108.~~ Exterior window and door assemblies containing glass shall comply with Section 2403. The design pressure for testing shall be calculated in accordance with Chapter 16. Each assembly shall be tested for 10 seconds at a load equal to 1.5 times the design pressure.

1710.5.2.1 Sectional garage doors and rolling doors.

Sectional garage doors and rolling doors shall be tested for determination of structural performance under uniform static air pressure difference in accordance with ANSI/DASMA 108, ASTM E 330 Procedure A, or TAS 202. For sectional garage doors and rolling doors tested in accordance with ASTM E 330, acceptance criteria shall be in accordance with ANSI/DASMA 108. (HVHZ shall comply with TAS 202.) Design pressures shall be determined from Table 1609.7(1) or ASCE 7. The design pressures, as determined from ASCE 7, are permitted to be multiplied by 0.6.

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Date Submitted	7/23/2012	**Section**	1710.5	**Proponent**	Dwight Wilkes
Chapter	17	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Reinstates exterior window and door assemblies structural performance and standards from the 2010 FBC and introduces language submitted to the ICC for inclusion into the 2015 IBC, thru modification to the Florida base code the 2012 IBC Proposals S173 and S172

Rationale

Reinstatement of these provisions will allow continued use of products that have already demonstrated performance. Manufacturers that have tested and qualified their systems under Florida's State and Local product approval rule to these test standards and material specifications would be allowed to continue using them without having to retest. The language proposed would modify the 2012 Base Code as proposed to the ICC in S172 Public Comment and S173.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions have been enforced.

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

These sections in the code will have a net cost savings by not having to retest products or evaluate them.

Impact to industry relative to the cost of compliance with code

These sections in the code will have a net cost savings by not having to retest products or evaluate them.

Requirements

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

Helps protect the health and welfare of the public by having the wind provisions for these products remain in the base code

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

These changes improve the code by reinstating wind provisions that have existed in the Florida Code.

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

These modifications do not discriminate as it allows the use of any product that show proof of meeting the code established standards.

Does not degrade the effectiveness of the code

This modification enhances the code by specific wind provisions for products that were established in the base code for the 2013 FBC and will bring the proposed modification to the Florida Code approximately 3 years sooner.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

The base language is in the 2012 IBC and the proposed modifications are based on S172 Public Comment and S173-12 that was Approved as Submitted during the International Code Council Public Hearings in Dallas, Texas April 29th - May 6th 2012. Along with the Public Comment submitted.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

General Comment - 08/09/2012 - 09/23/2012

Proponent Jaime Gascon **Submitted** 9/21/2012 **Attachments** No

Comment:

The proposed language allows for extrapolation of sizes (larger than) tested, which is not allowed in the HVHZ. These provisions are also applicable to impact resistant products as indicated by parameters 6 and 7, respectively. Limit analysis method to only smaller units or indicate HVHZ is not to extrapolate size. Preference would be to incorporate some of the language in MOD S5024.

S5582-G1

1710.5 Exterior window and door assemblies.
The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1710.5.1 or 1710.5.2. For the purposes of this section, the required design pressure shall be determined using the allowable stress design load combinations of Section 1605.3

Exceptions:

1) Structural wind load design pressures for window and door units ~~smaller~~ other than the size tested in accordance with Section 1710.5.1 ~~or 1710.5.2~~ shall be permitted to be ~~higher~~ different than the design value of the tested unit provided such ~~higher~~ different pressures are determined by accepted engineering analysis or validated by an additional test of the window or door unit to the different design pressure in accordance with section 1710.5.2.. All components of the ~~small~~ alternate size unit shall be the same as the tested or labeled unit. ~~Where such calculated design pressures are used, they shall be validated by an additional test of the window unit having the highest allowable design pressure.~~

i. -Operable windows and doors rated in this manner shall comply with the following:

1. The frame area of the alternate size unit shall not exceed the frame area of the tested approved unit.

2. Shall vary from the tested approved unit only in width, height or load requirements.

3. Shall not exceed 100 percent of the proportional deflection for fiber stress of the intermediate members of the approved unit.

4. Shall not exceed 100 percent of the concentrated load at the juncture of the intermediate members and the frame of the approved unit.

5. Shall not exceed the air and water infiltration resistance of the tested approved unit.

6. Shall not exceed the maximum cyclic pressure of the tested approved unit when tested per TAS 203 or ASTM E 1886 and ASTM E 1996 where applicable.

ii. Non-operable windows and doors rated in this manner shall comply with the following:

1. The frame area of the alternate size unit shall not exceed the frame area of the tested approved unit.

2. Shall vary from the tested approved unit only in width, height or load requirements.

3. The maximum uniform load distribution (ULD) of any side shall be equal to the uniform load carried by the side

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divided by the length of the side.

4. The ULD of any member shall not exceed the ULD of the corresponding member of the tested approved unit.

5. The ULD of each member shall be calculated in accordance with standard engineering analysis.

6. Shall not exceed the air and water infiltration resistance of the tested approved unit.

7. Shall not exceed the maximum cyclic pressure of the tested approved unit when tested per TAS 203 or ASTM E 1886 and ASTM E 1996 where applicable.

2. For window and door units tested in accordance with Section 1710.5.2, structural wind load design pressures for window

and door units other than the size tested in accordance with Section 1710.5.2 shall be permitted to be different than the design value of the tested unit provided such different pressures are determined by accepted engineering analysis or validated by an additional test of the window or door unit to the different design pressure in accordance with Section 1710.5.2. All components of the alternate size unit shall be the same as the tested unit. Where engineering analysis is used, the glass shall comply with

Section 2403.

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The current exception limits the use of comparative analysis to window units smaller than the size originally tested for labeling purposes. If comparative analysis is used to provide a higher design pressure rating of the smaller unit, its resistance to air infiltration and water penetration at the correspondingly higher design pressure required by AAMA/WDMA/CSA 101/I.S.2/A440 must be verified by testing of the unit. These characteristics cannot be determined by calculation.
Comparative analysis is also appropriate to rate window units larger than the size originally tested for labeling purposes to lower design pressures. In this scenario, the corresponding design pressure used to verify resistance to air infiltration and water penetration would also be lower. Testing would not be required to verify this level of performance since a higher level has already been determined by testing of the same components in a smaller window unit.
This proposal revises this section as appropriate to permit the use of comparative analysis for larger as well as smaller window units than those tested for labeling. The last sentence of the section is also revised to specify that when engineering analysis is used, the glass in the fenestration product must also comply with Section 2403. Section 2403 establishes specific criteria for the deflection of the framing supporting the glass.

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1710.5 Exterior window and door assemblies.
The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1710.5.1 or 1710.5.2. For the purposes of this section, the required design pressure shall be determined using the allowable stress design load combinations of Section 1605.3

Exceptions:

1) Structural wind load design pressures for window and door units ~~smaller~~ other than the size tested in accordance with Section 1710.5.1 ~~or 1710.5.2~~ shall be permitted to be ~~higher~~ different than the design value of the tested unit provided such ~~higher~~ different pressures are determined by accepted engineering analysis or validated by an additional test of the window or door unit to the different design pressure in accordance with section 1710.5.2.. All components of the ~~small~~ alternate size unit shall be the same as the tested or labeled unit. ~~Where such calculated design pressures are used, they shall be validated by an additional test of the window unit having the highest allowable design pressure.~~

i. -Operable windows and doors rated in this manner shall comply with the following:

1. The frame area of the alternate size unit shall not exceed the frame area of the tested approved unit.
2. Shall vary from the tested approved unit only in width, height or load requirements. 3. Shall not exceed 100 percent of the proportional deflection for fiber stress of the intermediate members of the approved unit.
4. Shall not exceed 100 percent of the concentrated load at the juncture of the intermediate members and the frame of the approved unit.
5. Shall not exceed the air and water infiltration resistance of the tested approved unit.
6. Shall not exceed the maximum cyclic pressure of the tested approved unit when tested per TAS 203 or ASTM E 1886 and ASTM E 1996 where applicable.

ii. Non-operable windows and doors rated in this manner shall comply with the following:

1. The frame area of the alternate size unit shall not exceed the frame area of the tested approved unit.
2. Shall vary from the tested approved unit only in width, height or load requirements.
3. The maximum uniform load distribution (ULD) of any side shall be equal to the uniform load carried by the side divided by the length of the side.
4. The ULD of any member shall not exceed the ULD of the corresponding member of the tested approved unit.
5. The ULD of each member shall be calculated in accordance with standard engineering analysis.
6. Shall not exceed the air and water infiltration resistance of the tested approved unit.
7. Shall not exceed the maximum cyclic pressure of the tested approved unit when tested per TAS 203 or ASTM E 1886 and ASTM E 1996 where applicable.

2. For window and door units tested in accordance with Section 1710.5.2, structural wind load design pressures for window and door units other than the size tested in accordance with Section 1710.5.2 shall be permitted to be different than the design value of the tested unit provided such different pressures are

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Date Submitted	7/24/2012	**Section**	1710.5	**Proponent**	T Stafford
Chapter	17	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Correlation with ASCE 7-10. Clarifies the appropriate reduction of design pressures for the purposes of testing of products that are and have been historically tested using allowable or nominal wind loads.

Rationale

This language is currently contained in the 2010 FBC. No new requirements are being proposed. This proposal simply clarifies that the design pressures determined from ASCE 7 can be multiplied by 0.6 for testing protocols that are based on allowable or nominal wind loads. The wind speeds in ASCE 7-10 are strength-design level loads. Some reference standards, such as the standards referenced in this section, are based on test criteria that assumes the wind loads are nominal or allowable wind loads. The language provides the correlation between these reference standards and the strength design-level loads of ASCE 7-10.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

This proposal does not strengthen or weaken the code. It is simply a correlation.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

S5615 Text Modification

1710.5 Exterior window and door assemblies.

The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1710.5.1 or 1710.5.2. The design pressures, as determined from ASCE 7, are permitted to be multiplied by 0.6.

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Date Submitted	7/31/2012	**Section**	1710.5	**Proponent**	James Bell
Chapter	17	**Affects HVHZ**	No	**Attachments**	No

General Comments No

Alternate Language No

Related Modifications

Summary of Modification

Component approvals are essential to door openings that are made of component. Hardware items such as hinges, locks,exit devices and bolts are the structural components and need to be rates and have quality assurance.

Rationale

The current method of testing and approvals do not properly rate and assure all components of a door opening assembly since the components are all manufactured by different manufacturers and assembled in the field. Ratings of all components and quality assurance covering all products is the safest way to assure the changes in each of the products after testing is inspected to protect the consumers from failures during a wind event.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Make inspections easier and more effective in the field since all componts are rated and marked for inspection.

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 inpact, already in the state other than in the HVHZ

Requirements

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

Each component is tested to all standards required for door openings which makes this stronger than the IBC and makes inspections more reliable.

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

Adding quality assurance to hardware as well as doors make changes to products held to same scrunity the holder of the door approval have to go through.

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

no impact

Does not degrade the effectiveness of the code

up grades the effectivness of the code

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

S5855 Text Modification

Page: 1

1710.5 Exterior window and door assemblies.
The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1710.5.1 or 1710.5.2.

Exception:
Structural wind load design pressures for window units smaller than the size tested in accordance with Section 1710.5.1 or 1710.5.2 shall be permitted to be higher than the design value of the tested unit provided such higher pressures are determined by accepted engineering analysis. All components of the small unit shall be the same as the tested unit. Where such calculated design pressures are used, they shall be validated by an additional test of the window unit having the highest allowable design pressure.

1710.5.1 Exterior windows and doors.
Exterior windows and sliding doors shall be tested and labeled as conforming to AAMA/WDMA/CSA101/I.S.2/A440. The label shall state the name of the manufacturer, the approved labeling agency and the product designation as specified in AAMA/WDMA/CSA101/I.S.2/A440. Exterior side-hinged doors shall be tested and labeled as conforming to AAMA/WDMA/CSA101/I.S.2/A440 or comply with Section 1710.5.2. Products tested and labeled as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 shall not be subject to the requirements of Sections 2403.2 and 2403.3.

1710.5.2 Exterior windows and door assemblies not provided for in Section 1710.5.1.
Exterior window and door assemblies shall be tested in accordance with ASTM E 330. Structural performance of garage doors and rolling doors shall be determined in accordance with either ASTM E 330 or ANSI/DASMA 108, and shall meet the acceptance criteria of ANSI/DASMA 108. Exterior window and door assemblies containing glass shall comply with Section 2403. The design pressure for testing shall be calculated in accordance with Chapter 16. Each assembly shall be tested for 10 seconds at a load equal to 1.5 times the design pressure.

1710.5.2.1 Optional exterior swinging door component testing

With the exception of HVHZ, exterior side-hinged door assemblies not covered in section 1710.5.2 shall have the option to have the components of the assembly tested and rated for structural interrity in accordancewith the following specification:

ANSI A250.13

Following the structural testing of exterior door components, there shall be no permanent deformati on of ant perimeter frame or panel member in excess of .4 percent of its span after the load is removed. After each specified loading, there shall be no glass breakage permanent damage to fasteners, hardware parts, or any other damage that causes the door to be inoperable, as applicable. All components shall be rated appropriately for design pressure and impact resistance individually. Tested components then are assembled to create an exterior door assembly with the lowest rating for all components being the rating or the assembly.

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S6007

Date Submitted	8/2/2012	**Section**	1710.5	**Proponent**	Kari Hebrank
Chapter	17	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Add new exception for custom doors. Allows accepted engineering practices such as rational or comparative analysis for one-of-a-kind custom doors. This language has been incorporated into every version of the Florida Building Code since 2002.

Rationale

This proposal will make enforcement by the building official easier by clarifying that Section 1710.5 allows accepted engineering practices such as rational or comparative analysis for one-of-a-kind custom doors, rather than having the building official rely solely on his authority for alternative materials and methods or the product approval rule which allows for rational or comparative analysis by a Florida registered architect or engineer or by an approved product evaluation entity.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This proposal will make enforcement by the building official easier by clarifying accepted engineering practices--rational or comparative analysis-- for custom doors. This will maintain a practice that was approved in the 2004, 2007 and 2010 Florida Building Code.

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

This clarifying amendment will reduce the cost of code compliance for building and property owners because they will not have to pay an exorbitant sum to have a custom-made door tested.

Impact to industry relative to the cost of compliance with code

This amendment will reduce the cost of code compliance for the door industry as the industry will be able to utilize accepted engineering practices to indicate code compliance for custom doors.

Requirements

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

This proposal ensures that custom exterior doors are either tested by an approved testing laboratory or engineered to meet the code.

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

This change provides an equivalent approach to testing for exterior custom doors by allowing accepted engineering practices which must be conducted by a licensed professional.

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

This proposal does not discriminate against materials, products, methods or systems of construction.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code but rather ensures the intent of the code is met.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S6007-G1

Proponent Jaime Gascon **Submitted** 9/21/2012 **Attachments** No

Comment:

Why the double standard? There are many product approval options available among the Building Official's option for alternate methods. A comparative approach may be more in line with code requirements to even the playing field. Try substituting the last sentence with "…or compared to similar product tested by the same manufacturer."

Add new exception #2:

1710.5 Exterior window and door assemblies. The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with section 1710.5.1 or 1710.5.2.

Exception:

1. Structural wind design pressures for window units smaller than the size tested in accordance with 1710.5.1 and 1710.5.2 shall be permitted to be higher than the design value of the tested unit provided that such higher pressures are determined by accepted engineering analysis. All components of the small unit shall be the same as the tested unit. Where such design pressure calculations are used, they shall be validated by an additional test of the window having the highest allowable design pressure.

2. Custom doors. Custom (one-of-a-kind) exterior door assemblies shall be tested by an approved testing laboratory or be engineered in accordance with accepted engineering practices.

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S6012

Date Submitted	8/2/2012	**Section**	1710.5	**Proponent**	Kari Hebrank
Chapter	17	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

This proposed modification will allow approved door components to be interchanged in exterior door assemblies provided that the door components provide equal or greater performance. This change has been part of the 2004, 2007 and 2010 Florida Building Code.

Rationale

This change is consistent with the Commission's declaratory statement DCA 02-DEC 166 and previous editions of the Florida Building Code. This proposal would allow interchangeability of approved door components in exterior door assemblies and is consistent with other parts of the code that allow for substitutions, such as anchoring systems, as long as performance is the same.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This proposal will make enforcement easier by continuing the practice of allowing approved door components to be interchanged in exterior door assemblies provided that the components provide equal or greater performance.

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

This change will reduce the cost of code compliance for building and property owners by eliminating costly delays when a product is not available as they will be able to switch equally-performing door components, including hardware.

Impact to industry relative to the cost of compliance with code

This proposal will reduce the cost of code compliance for the door industry as the industry can utilize approved components in door assemblies and will not have to fund additional, duplicative engineering analysis when interchanging hardware.

Requirements

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

This change ensures that only approved door components with equal or greater structural performance can be interchanged.

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

This code change strengthens the code by specifying the conditions under which door components and hardware may be interchanged.

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

This change does not discriminate against materials, products, methods or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code, but rather ensures the intent of the code is met by applying standards to door components and hardware.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S6012-G1

Proponent Jaime Gascon **Submitted** 9/21/2012 **Attachments** No

Comment:

The proposed language does not match the justifications provided. The language does not use the term “approved door component” or “approved door assemblies”. The MOD, as written allows for any component that is ‘engineered’ to be substituted in a door assembly. It should at least require that the ‘assembly’ be pre-approved.

Add new section to 1710.5:

1710.5.3 Door components evaluated by an approved product evaluation entity, certification agency, testing laboratory or engineer may be interchangeable in exterior door assemblies provided that the door components provide equal or greater structural performance as demonstrated by accepted engineering practices.

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Date Submitted	7/24/2012	**Section**	1710.6	**Proponent**	Dwight Wilkes
Chapter	17	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

5633

Summary of Modification

Reason: The overall intent of this proposal is to clarify the requirements for tubular daylighting devices, within the context of skylights and sloped glazing.

Rationale

Reason: The overall intent of this proposal is to clarify the requirements for tubular daylighting devices, within the context of skylights and sloped glazing.

Tubular daylighting devices are a type of skylights, just as unit skylights and clarifies that, like unit skylights, TDDs are a type of skylight. This change would also bring consistency to the definition of skylights and sloped glazing.

This is the first of three modifications, second to chapter 17 and third to chapter 24.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions will be part of the Florida Base Code Code and adds clarity to the requirements for tubular daylighting devices within the context of skylights and sloped glazing.

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

The code change proposal will not increase the cost of construction.

Impact to industry relative to the cost of compliance with code

The code change proposal will not increase the cost of construction.

Requirements

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

Helps protect the health and welfare of the public by having the wind provisions for these products

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

These changes bring clarity to the code that these products are tested and labeled.

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

These modifications do not discriminate as it allows the use of any product that shows proof of meeting the code established standards.

Does not degrade the effectiveness of the code

The overall intent of this proposal is to clarify the requirements for tubular daylighting devices, within the context of skylights and sloped glazing.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

S5635 Text Modification

Page: 1

SECTION 202

DEFINITIONS

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

Revise as follows:

1710.6 Skylights and sloped glazing. ~~Unit skylights and tubular daylighting devices (TDDs) shall comply with the requirements of Section 2405. All other~~ Skylights and sloped glazing shall comply with the requirements of Chapter 24.

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Revise as follows:

1710.6 Skylights and sloped glazing. ~~Unitskylightsand tubular daylighting devices(TDDs)shall comply with the requirementsof Section2405.Allother~~ Skylights and sloped glazing shall comply with the requirements of Chapter 24.

Page: 1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5635_Text_S176-12 Section 1710.6 Unit Skylights and TDD ICC Report of Public

S176-12

Errata: Revise as follows:

2405.5 Unit skylights and tubular daylighting devices. Unit skylights and tubular daylighting devices shall be tested and labeled as complying with AAMA/WDMA/CSA 101/I.S./A440. The *label* shall state the name of the manufacturer, the *approved* labeling agency, the product designation and the performance grade rating as specified in AAMA/WDMA/CSA 101/I.S.2/A440. If the product manufacturer has chosen to have the performance grade of the skylight rated separately for positive and negative design pressure, then the *label* shall state both performance grade ratings as specified in AAMA/ WDMA/CSA 101/I.S.2/A440 and the skylight shall comply with Section 2405.5.2. If the skylight is not rated separately for positive and negative pressure, then the performance grade rating shown on the *label* shall be the performance grade rating determined in accordance with AAMA/WDMA/ CSA 101/I.S.2/A440 for both positive and negative design pressure and the skylight shall conform to Section 2405.5.1.

(Portions of code change not shown remain unchanged)

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Committee Action: **Approved as Modified**

Modify proposal as follows:

2404.2 Sloped glass. Glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunrooms, sloped roofs and other exterior applications shall be designed to resist the most critical of the following combinations of loads.

Exception: The ~~design pressure~~ performance grade rating of unit skylights and tubular daylighting devices shall be determined in accordance with Section 2405.5.

(Portions of section not shown remain unchanged)

(Portions of proposal not shown are unchanged)

Committee Reason: This code change makes requirements applicable to tubular daylighting devices and this proposal is preferred over S301-12. The modification substitutes performance grade in the exception for consistency with Section 2404.5.

Page: 1

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Date Submitted	7/27/2012	**Section**	1710.8	**Proponent**	Joseph Belcher
Chapter	17	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None.

Summary of Modification

Adds requirements labeling and installation of hurricane resistant coverings.

Rationale

The proposal retains existing language incorporating the recommendations of the Garage Door-Window Labeling Work Group. The work group was appointed by the Florida Building Commission in response to problems cited by building officials in determining if the proper impact resistant coverings were provided on a job. This proposal incorporates the recommendations of the Garage Door-Window Labeling Workgroup.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Positive impact for enforcement. The provisions are field tested and proven to be beneficial to enforcement. This proposal incorporates the recommendations of the Garage Door-Window Labeling Workgroup convened at the request of code enforcement and supported by the hurricane protection industry.

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

Will not result in any cost because the provisions have been in effect since FBC 2007. The provisions are field tested and proven to be beneficial to property owners in making certain proper products are properly installed. The original proposal was supported by the hurricane protection industry.

Impact to industry relative to the cost of compliance with code

None - required since FBC 2007. Cost estimates are: a. Water Resistant Self-adhering Permanent Labels approximately $0.15 per label. Commonly used on Accordion, Roll, Bahama, and Colonial style shutters.

b. Embossed or ink jet labels used on metal and plastic panels approximately $0.05 per label.

Requirements

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

: Improves public health, a safety, and welfare by requiring data permitting inspection personnel and the general public to ascertain the proper product is provided and installed in accordance with its product approval.

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

Strengthens and improves the code by requiring data to assist inspection of products. The provisions are carried over from previous editions and are field tested and proven to be effective.

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

The provisions are carried over from previous editions and are field tested and proven to be effective and do not discriminate.

Does not degrade the effectiveness of the code

The provisions are carried over from previous editions and are field tested and proven to be effective and increase the effectiveness of the code by providing the data needed to properly inspect the products.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1710.8 Impact resistant coverings.

1710.8.1 Labels.

A permanent label shall be provided by the product approval holder on all impact resistant coverings.

1710.8.2

The following information shall be included on the labels on impact resistant coverings:

1. Product approval holder name and address.

2. All applicable methods of approval. Methods of approval include, but are not limited to Miami-Dade NOA; Florida Building Commission, TDI Product Evaluation; ICC-ES.

3. The test standard or standards specified at Section 1609.1.2, including standards referenced within the test standards specified at Section 1609.1.2 used to demonstrate code compliance.

4. For products with a Florida Product Approval Number or a Miami-Dade County Building and Neighborhood Compliance Department Notice of Acceptance Number (NOA), such numbers shall be included on the label.

1710.8.3 Location of label.

The location of the label on the impact resistant covering shall be as follows:

1. Accordions: Bottom of the locking bar or center mate facing the exterior or outside.

2. Rollup: On the bottom of the hood facing the exterior or outside or on the bottom slat facing the exterior or outside.

3. Bahama Awning or Colonial Hinged: On the bottom, placed on the back of the shutter.

4. Panels: For metal and plastic panels the label may be embossed or printed spaced not more than every three (3) lineal feet on each panel. The label shall be applied by the holder of the product approval and shall face the exterior or outside.

5. Framed products: The label shall be on the side or bottom facing the exterior or outside.

6. Labels on all other products shall face the exterior or outside.

1710.8.4 Installation.

All impact resistant coverings shall be installed in accordance with the manufacturer's installation instructions and in accordance with the product approval. Installation instructions shall be provided and shall be available to inspection personnel on the job site. Opening protection components, fasteners, and other parts evaluated by an approved product evaluation entity, certification agency, testing laboratory, architect, or engineer and approved by the holder of the product approval may be interchangeable in opening protection assemblies provided that the opening protection component(s) provide equal or greater structural performance and durability as demonstrated by testing in accordance with approved test standards.

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The State of Florida is the only of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection.

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S5712 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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Date Submitted	7/29/2012	**Section**	1710.9.4	**Proponent**	Joseph Belcher
Chapter	17	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Brings forward existing provisions for soffit installation and testing.

Rationale

The hurricanes of 2004 revealed soffits as a very weak link in the building water intrusion resistance system. In numerous cases severe water damage was caused by rain blown in through soffit spaces where the soffit was blown out or dislodged. In most cases the storms were below design wind speeds. In response, the Commission appointed a Soffit Work Group to study the issue and propose changes as deemed necessary. The proposed language embodies the recommendations of the Work Group and was first placed in the 2010 FBC.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on costs as is currently required. Provisions benefit enforcement by mandating installation in accordance with manufacturer's instructions and for the instructions to be on the jobsite for use by the inspector.

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

No cost impact as is currently required. Owners will benefit by the increased ability of contractors to make proper installation.

Impact to industry relative to the cost of compliance with code

No cost impact as is currently required. Industry will benefit by having clear installation instructions to follow.

Requirements

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

The proposal will benefit the public by helping to assure proper installation thereby improving the ability of soffits to resist water intrusion.

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

The proposal strengthens the code by providing requirements addressing a known weak area in the weather resistance provisions of the base code.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code by addressing a known weak area in the weather resistance provisions of the base code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5737 Text Modification

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1710.9 Soffit.

1710.9.4 Installation. All manufactured soffit materials shall be installed in accordance with the manufacturer's installation instructions and in accordance with the product approval. Installation instructions shall be provided and shall be available to inspection personnel on the job site. Soffit pieces, components, fasteners, and other parts evaluated by an approved product evaluation entity, certification agency, testing laboratory, architect, or engineer and approved by the holder of the product approval may be interchangeable in manufactured soffit systems provided that the soffit system component or components provide equal or greater structural performance and durability as demonstrated by testing in accordance with approved test standards.

All exterior wall coverings and soffits shall be capable of resisting the design pressures specified for walls for components and cladding loads in accordance with Section 1609.1. Manufactured soffits shall be tested at 1.5 times the design pressure.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5737_TextOfModification_1.png

The State of Florida is the only one of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection. Extensive damage was caused by water intrusion due to soffit failure during the storms of 2004. The history of loss to water intrusion through failed soffits indicates the need for more vigorous requirements than those provided by the base code.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5737_PQ2_EvidenceData_Soffit_1.png

S5737 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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Date Submitted	7/29/2012	**Section**	1710.9	**Proponent**	Joseph Belcher
Chapter	17	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Section 1404.13 Soffit Labeling to provide a reference to the new 1710.9.
Section 1609.1 adds reference to Section 1710.9 and requires soffit to be designed as C & C.

Summary of Modification

Brings currently required labeling provisions for soffits forward.

Rationale

The hurricanes of 2004 revealed soffits as a very weak link in the building water intrusion resistance system. In numerous cases severe water damage was caused by rain blown in through soffit spaces where the soffit was blown out or dislodged. In most cases the storms were below design wind speeds. In response, the Commission appointed a Soffit Work Group to study the issue and propose changes as deemed necessary. The proposed language embodies the recommendations of the Work Group and was first placed in the 2010 FBC.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on costs as is currently required. Labeling assists local enforcement by requiring proper documentation for inspectors to review.

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

There may be a slight increase in cost for the manufacturer passed eventually to the owners. Costs are not available from the soffit industry. However, similar provisions instituted for impact resistant covering panels are estimated by that industry at less than 0.03¢ per unit.

Impact to industry relative to the cost of compliance with code

Costs are not available from the soffit industry. However, similar provisions instituted for impact resistant covering panels were estimated by that industry at less than 0.03¢ per unit.

Requirements

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

The proposal will benefit the public by improving the ability of soffits to resist water intrusion.

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

The proposal strengthens the code by providing requirements addressing a known weak area of the base code.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code by addressing a known weak area in the weather resistance provisions of the base code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1710.9 Soffit.

1710.9.1 Product Approval. Manufactured soffit materials and systems shall be subject to statewide or local product approval as specified in FAC Rule 61G-20. The net free area of the manufactured soffit material or system shall be included in the product approval submittal documents.

1710.9.2 Labels. Individual manufactured soffit pieces shall be marked at not more than four feet on center with a number or marking that ties the product back to the manufacturer.

1710.9.3 The following information shall be included on the manufactured soffit material packaging or on the individual manufactured soffit material or system pieces:

1. Product approval holder and/or manufacturer name and city and state of manufacturing plant.

2. Product model number or name.

3. Method of approval and approval numbers as applicable. Methods of approval include, but are not limited to: Florida Building Commission FL #; Miami-Dade NOA; TDI Product Evaluation; and, ICC-ES.

4. The test standard or standards specified in Chapter 14 used to demonstrate code compliance.

5. The net free area shall be included on the packaging or label.

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The State of Florida is the only one of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection. Extensive damage was caused by water intrusion due to soffit failure during the storms of 2004. The history of loss to water intrusion through failed soffits indicates the need for more vigorous requirements than those provided by the base code.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5736_PQ2_EvidenceData_Soffit_1.png

S5736 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5736_PQ3_Submitted_Time_IBC_IRC_1.png

Date Submitted	7/24/2012	**Section**	1710	**Proponent**	Dwight Wilkes
Chapter	17	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Reinstates the exterior window and door structural performance, standards and label from the 2010 FBC with modifications to clearify Existing FBC 1715.5.

Rationale

Reinstates the exterior windows and doors structural performance, standards and label requirements from the 2010 FBC with additional clearification.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

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

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

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

Helps protect the health and welfare of the public by having the wind provisions for these products remain in the base code

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

These changes improve the code by reinstating wind provisions that have existed in the Florida Code.

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

These modifications do not discriminate as it allows the use of any product that shows proof of meeting the code established standards.

Does not degrade the effectiveness of the code

This modification enhances the code by specific wind provisions for products that were established in the base code for the 2013 FBC and will bring the proposed modification to the Florida Code

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

Part of the proposed changes are contained in the Florida Base Code [2012 IBC] the additional language and changes are from the 2010 Florida Building Code-Building with additional language to add clarity to Base Code. S172-12, S173-12 and S174-12 Proposed Change to the 2012 IBC

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

General Comment - 08/09/2012 - 09/23/2012

Proponent Jaime Gascon **Submitted** 9/21/2012 **Attachments** No

Comment:
The references to ASTM E1300 years for HVHZ can be left off and simply rely on the versions in Chapter 35.

S5623-G1

MODIFICATION TEXT:

1710.5.1 Exterior windows and doors.

Exterior windows and ~~sliding~~ doors shall be tested by an approved independent testing laboratory, and shall be labeled to indicate compliance with the requirements of one on the following specifications: ~~as conforming to~~ ANSI/AAMA/NWWDA 101/I.S. 2 or ANSI/AAMA/WDMA/101/I.S.2/NAFS or WDMA/CSA101/I.S.2/A440 or TAS 202(HVHZ shall comply with TAS 202 utilizing ASTME 1300-98 or ASTME 1300-04 or Section 2404). ~~The label shall state the name of the manufacturer, the approved labeling agency and the product designation as specified in AAMA/WDMA/CSA101/I.S.2/A440. Exterior side hinged doors shall be tested and labeled as conforming to AAMA/WDMA/CSA101/I.S.2/A440 or comply with Section 1710.5.2. Products tested and labeled as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 shall not be subject to the requirements of Sections 2403.2 and 2403.3.~~

Exterior windows and doors shall be labeled with a permanent label, marking, or etching providing traceability to the manufacturer and product. The following shall also be required either on a permanent label or on a temporary supplemental label applied by the manufacturer: information identifying the manufacturer, the product model/series number, positive and negative design pressure rating, product maximum size, glazing thickness, impact-resistance rating if applicable, Florida Product Approval number or Miami-Dade Product Approval number, applicable test standard(s), and approved product certification agency, testing laboratory, evaluation entity or Miami-Dade Product Approval.

The labels are limited to one design pressure rating per reference standard. The temporary supplemental label shall remain on the window or door until final approval by the building official.

Exceptions:

1. Door assemblies installed in nonhabitable areas where the door assembly and area are designed to accept water infiltration need not be tested for water infiltration.

2. Door assemblies installed where the overhang (OH) ratio is equal to or more than 1 need not be tested for water infiltration. The overhang ratio shall be calculated by the following equation:
OH ratio = OH Length/OH Height

Where:
OH length = The horizontal measure of how far an overhang over a door projects out from door surface.
OH height = The vertical measure of the distance from the door sill to the bottom of the overhang over a door.

3. Pass-through windows for serving from a single-family kitchen, where protected by a roof overhang of 5 feet (1.5 m) or more shall be exempted from the requirements of the water infiltration test.

Glass Strength: Products tested and labeled as conforming to ANSI/AAMA/NWWDA 101/ I.S.2 or ANSI/AAMA/WDMA/101/ I.S.2/NAFS or AAMA/WDMA/CSA 101/I.S.2/A440 or TAS 202 shall not be subject to the requirements of Sections 2403.2 or 2403.3 or 2404.1. Determination of load resistance of glass for specific loads of products not tested and certified in accordance with Section 1710.5.2.1 shall be designed to comply with ASTM E 1300 in accordance with Section 2404. ~~The temporary supplemental label shall designate the type and thickness of glass or glazing material.~~

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MODIFICATION TEXT:
1710.5.1 Exterior windows and doors.

Exterior windows and ~~sliding~~ doors shall be tested by an approved independent testing laboratory, and shall be labeled to indicate compliance with the requirements of one on the following specifications: ~~as conforming to~~ ANSI/AAMA/NWWDA 101/I.S. 2 or ANSI/AAMA/WDMA/101/I.S.2/NAFS or WDMA/CSA101/I.S.2/A440 or TAS 202(HVHZ shall comply with TAS 202 utilizing ASTME 1300-98 or ASTME 1300-04 or Section 2404). ~~The *label* shall state the name of the manufacturer, the *approved* labeling agency and the product designation as specified in AAMA/WDMA/CSA101/I.S.2/A440. Exterior side-hinged doors shall be tested and *labeled* as conforming to AAMA/WDMA/CSA101/I.S.2/A440 or comply with Section 1710.5.2. Products tested and labeled as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 shall not be subject to the requirements of Sections 2403.2 and 2403.3.~~

Exterior windows and doors shall be labeled with a permanent label, marking, or etching providing traceability to the manufacturer and product. The following shall also be required either on a permanent label or on a temporary supplemental label applied by the manufacturer: information identifying the manufacturer, the product model/series number, positive and negative design pressure rating, product maximum size, glazing thickness, impact-resistance rating if applicable, Florida Product Approval number or Miami-Dade Product Approval number, applicable test standard(s), and approved product certification agency, testing laboratory, evaluation entity or Miami-Dade Product Approval.

The labels are limited to one design pressure rating per reference standard. The temporary supplemental label shall remain on the window or door until final approval by the building official.

Exceptions:
1. Door assemblies installed in nonhabitable areas where the door assembly and area are designed to accept water infiltration need not be tested for water infiltration.
2. Door assemblies installed where the overhang (OH) ratio is equal to or more than 1 need not be tested for water infiltration. The overhang ratio shall be calculated by the following equation:
OH ratio = OH Length/OH Height
Where:
OH length = The horizontal measure of how far an overhang over a door projects out from door surface.
OH height = The vertical measure of the distance from the door sill to the bottom of the overhang over a door.
3. Pass-through windows for serving from a single-family kitchen, where protected by a roof overhang of 5 feet (1.5 m) or more shall be exempted from the requirements of the water infiltration test.

Glass Strength: Products tested and labeled as conforming to ANSI/AAMA/NWWDA 101/ I.S.2 or ANSI/AAMA/WDMA/101/ I.S.2/NAFS or AAMA/WDMA/CSA 101/I.S.2/A440 or TAS 202 shall not be subject to the requirements of Sections 2403.2 or 2403.3 or 2404.1. Determination of load resistance of glass for specific loads of products not tested and certified in accordance with Section 1710.5.2.1 shall be designed to comply with ASTM E 1300 in accordance with Section 2404. ~~The temporary supplemental label shall designate the type and thickness of glass or glazing material.~~

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5623_Text_2010 Florida 1715.5 Exterior windows and doors, inserted into Base Code

Date Submitted	7/30/2012	**Section**	1715.5.4.2	**Proponent**	Jim Heise
Chapter	17	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

1715.5.4.2 Masonry, concrete or other structural substrate. Add to read as shown.

Rationale

Language carried over from the 2010 Code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.
Continues improved efficiency in enforcing the code.

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

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

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

Contributes to public health, safety and welfare by clarifying proper window and door installation

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

This will improve the code by reinstating these standards that exist in the Florida Code with the current edition.

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1715.5.4.2 Masonry, concrete or other structural substrate. Where the wood shim or buck thickness is less than 11/2 inches (38 mm), window and door assemblies shall be anchored through the main frame or by jamb clip or subframe system, in accordance with the manufacturer's published installation instructions. Anchors shall be securely fastened directly into the masonry, concrete or other structural substrate material. Unless otherwise tested, bucks shall extend beyond the interior face of the window or door frame such that full support of the frame is provided. Shims shall be made from materials capable of sustaining applicable loads, located and applied in a thickness capable of sustaining applicable loads. Anchors shall be provided to transfer load from the window or door frame to the rough opening substrate.

Where the wood buck thickness is 11/2 inches (38 mm) or greater, the buck shall be securely fastened to transfer load to the masonry, concrete or other structural subtrate and the buck shall extend beyond the interior face of the window or door frame. Window and door assemblies shall be anchored through the main frame or by jamb clip or subframe system or through the flange to the secured wood buck in accordance with the manufacturer's published installation instructions. Unless otherwise tested, bucks shall extend beyond the interior face of the window or door frame such that full support of the frame is provided. Shims shall be made from materials capable of sustaining applicable loads, located and applied in a thickness capable of sustaining applicable loads. Anchors shall be provided to transfer load from the window or door frame assembly to the secured wood buck.

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Date Submitted	7/5/2012	**Section**	1801.1	**Proponent**	Michael Goolsby
Chapter	18	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Remove guidance to HVHZ sections deleted as non-wind related.

Rationale

Legislative mandate resulted in deletion of Chapter 18 HVHZ. The base code will be utilized as it encompasses and includes all relevant requirements relating to foundations.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions are now utilized, formatting only.

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

None. Base code provisions are now utilized, formatting only.

Impact to industry relative to the cost of compliance with code

None. Base code provisions are now utilized, formatting only.

Requirements

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

N/A – Removing HVHZ sections, base code encompasses and includes all previous HVHZ requirements.

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

N/A – Removing HVHZ sections, base code encompasses and includes all previous HVHZ requirements.

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

N/A – Removing HVHZ sections, base code encompasses and includes all previous HVHZ requirements.

Does not degrade the effectiveness of the code

N/A – Removing HVHZ sections, base code encompasses and includes all previous HVHZ requirements.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1801.1 Scope. The provisions of this chapter shall apply to building and foundation systems.

~~Exception: Buildings and structures located within the high-velocity hurricane zone shall comply with the provisions of Section 1805, and Sections 1816 through 1834.~~

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S4934

Date Submitted	7/5/2012	**Section**	1801.2	**Proponent**	Michael Goolsby
Chapter	18	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

With the elimination of Chapter 18 HVHZ sections, formatting of certain base code sections becomes necessary. Where Chapter 18 sections give direction to non-Chapter 18 sections, those sections must be modified to also contain guidance to the equivalent HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions are now utilized, formatting only.

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

None. Base code provisions are now utilized, formatting only.

Impact to industry relative to the cost of compliance with code

None. Base code provisions are now utilized, formatting only.

Requirements

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary direction to applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4934 Text Modification

1801.2 Design basis. Allowable bearing pressures, allowable stresses and design formulas provided in this chapter shall be used with the allowable stress design load combinations specified in Section 1605.3 the HVHZ shall comply with Section 1618.9. The quality and design of materials used structurally in excavations and foundations shall comply with the requirements specified in Chapters 16, 19, 21, 22 and 23 of this code. Excavations and fills shall also comply with Chapter 33.

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Date Submitted	7/5/2012	**Section**	1806.1	**Proponent**	Michael Goolsby
Chapter	18	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

With the elimination of Chapter 18 HVHZ sections, formatting of certain base code sections becomes necessary. Where Chapter 18 sections give direction to non-Chapter 18 sections, those sections must be modified to also contain guidance to the equivalent HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions are now utilized, formatting only.

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

None. Base code provisions are now utilized, formatting only.

Impact to industry relative to the cost of compliance with code

None. Base code provisions are now utilized, formatting only.

Requirements

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary direction to applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4935 Text Modification

1806.1 Load combinations. The presumptive load-bearing values provided in Table 1806.2 shall be used with the allowable stress design load combinations specified in Section 1605.3 the HVHZ shall comply with Section 1618.9. The values of vertical foundation pressure and lateral bearing pressure given in Table 1806.2 shall be permitted to be increased by one-third where used with the alternative basic load combinations of Section 1605.3.2 the HVHZ shall comply with Section 1618.9 that include wind or earthquake loads.

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Date Submitted	8/1/2012	**Section**	1807.2.4	**Proponent**	Joseph Belcher
Chapter	18	**Affects HVHZ**	No	**Attachments**	Yes

General Comments No

Alternate Language No

Related Modifications

None

Summary of Modification

Retains criteria for design and construction of reinforced masonry retaining walls.

Rationale

The table providing specific requirements for reinforced masonry retaining walls has been in the code since the 2001 Edition. While the base code provides criteria for the design of retaining walls, it does not provide specific criteria for masonry. The base code design criteria are retained for retaining the design of retaining walls of other materials.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impacts to local entity relative to enforcement of code as the provisions have been in effect since the 2001 Edition. No new requirements created.

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

No impacts to building and property owners as the provisions have been in effect since the 2001 Edition. No new requirements created.

Impact to industry relative to the cost of compliance with code

No impacts to industry as the provisions as the provisions have been in effect since the 2001 Edition. No new requirements created.

Requirements

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

Bringing the provisions forward improves safety and welfare of the general public by establishing criteria for the design of reinforced masonry retaining walls.

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

Bringing the definition forward improves the code by establishing criteria for the design of reinforced masonry retaining walls.

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

The proposed amendment does not discriminate.

Does not degrade the effectiveness of the code

Improves the effectiveness of the code by providing specific criteria for the design and construction of reinforced masonry retaining walls.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1807.2 Retaining walls. Retaining walls shall be designed in accordance with Sections 1807.2.1 through 1807.2.~~3~~ 4.

1807.2.1 General. Retaining walls shall be designed to ensure stability against overturning, sliding, excessive foundation pressure and water uplift. Where a keyway is extended below the wall base with the intent to engage passive pressure and enhance sliding stability, lateral soil pressures on both sides of the keyway shall be considered in the sliding analysis.

1807.2.2 Design lateral soil loads. Retaining walls shall be designed for the lateral soil loads set forth in Section 1610.

1807.2.3 Safety factor. Retaining walls shall be designed to resist the lateral action of soil to produce sliding and overturning with a minimum safety factor of 1.5 in each case. The load combinations of Section 1605 shall not apply to this requirement. Instead, design shall be based on 0.7 times nominal earthquake loads, 1.0 times other ***nominal loads***, and investigation with one or more of the variable loads set to zero. The safety factor against lateral sliding shall be taken as the available soil resistance at the base of the retaining wall foundation divided by the net lateral force applied to the retaining wall.

Exception: Where earthquake loads are included, the minimum safety factor for retaining wall sliding and overturning shall be 1.1.

1807.2.4 Reinforced masonry retaining walls.

Vertical reinforcement for masonry retaining walls shall comply with Table 1807.2.4 or shall be designed in accordance with TMS 402/ACI 530/ASCE 5. Masonry shall be fully grouted with a minimum f'm of 1,500 psi (10 343 kPa). Mortar for masonry shall be Type M or S and laid in running bond. The specified location of the reinforcement shall equal or exceed the effective depth distance, d, noted in Table 1807.2.4 and shall be measured from the exposed side of the wall to the center of the vertical reinforcement. Footings for reinforced masonry retaining walls shall be designed in accordance with ACI 318.

TABLE 1807.2.4
REINFORCEMENT FOR MASONRY RETAINING WALLS[a]

Page: 1
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Nominal Wall thickness [(in.) (mm)]	Wall depth, H, ft (m)	Reinforcement size & spacing for equivalent fluid weight c pcf (kN/m3), of:		
		30 (4.7)	45 (7.1)	60 (9.4)
	4.0 (1.2)	#4 at 64 in.	#4 at 40 in.	#4 at 32 in.
	4.7 (1.4)	#4 at 40 in.	#4 at 24 in.	#4 at 16 in.
8 (203)	5.3 (1.6)	#4 at 24 in.	#4 at 16 in.	#5 at 16 in.
	6.0 (1.8)	#5 at 24 in.	#6 at 16 in.	#8 at 16 in.
	6.7 (2.0)	#5 at 16 in.	#6 at 8 in.	—
	4.0 (1.2)	#4 at 72 in.	#4 at 64 in.	#4 at 48 in.
	4.7 (1.4)	#4 at 56 in.	#4 at 40 in.	#4 at 24 in.
	5.3 (1.6)	#4 at 40 in.	#4 at 24 in.	#4 at 16 in.
10 (254)	6.0 (1.8)	#4 at 24 in.	#4 at 16 in.	#5 at 16 in.
	6.7 (2.0)	#4 at 16 in.	#5 at 16 in.	#6 at 16 in.
	7.3 (2.2)	#5 at 24 in.	#6 at 16 in.	#6 at 8 in.
	8.0 (2.4)	#5 at 16 in.	#6 at 8 in.	—
	4.0 (1.2)	#4 at 72 in.	#4 at 72 in.	#4 at 64 in.
	4.7 (1.4)	#4 at 72 in.	#4 at 48 in.	#4 at 40 in.
	5.3 (1.6)	#4 at 48 in.	#4 at 32 in.	#4 at 24 in.
	6.0 (1.8)	#4 at 32 in.	#4 at 24 in.	#4 at 16 in.
12 (305)	6.7 (2.0)	#4 at 24 in.	#4 at 16 in.	#5 at 16 in.
	7.3 (2.2)	#4 at 16 in.	#5 at 16 in.	#6 at 16 in.
	8.0 (2.4)	#5 at 24 in.	#5 at 16 in.	#7 at 16 in.
	8.7 (2.7)	#5 at 16 in.	#7 at 16 in.	#7 at 8 in.
	9.3 (2.8)	#6 at 16 in.	#7 at 8 in.	—

a. Based on fully grouted masonry; f'm = 1500 psi (10.3 MPa); d = 5 in., 7 in. and 9 in. (127, 178 and 229 mm) for wall thicknesses of 8, 10, and 12 in. (203, 254, and 305 mm), respectively; level backfill to top of wall.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5958_TextOfModification_2.png

The base code does provide specific provisions for designing and constructing reinforced masonry retaining walls. Chapter 18 of the first base code was title Foundation and Retaining Walls, but contained no mention of retaining walls, other than in the title. The provisions in this proposal were developed to address the lack of guidance for such walls and adopted in the first edition of the FBC. The provisions have been in the Florida Building Code since the first edition and continue to serve an important function in the design of masonry retaining walls.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5958_PQ2_Geo_Data_Ret_Walls_1.png

S5958 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

Page: 1

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S5007

Date Submitted	7/9/2012	**Section**	1808.3	**Proponent**	Michael Goolsby
Chapter	18	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

With the elimination of Chapter 18 HVHZ sections, formatting of certain base code sections becomes necessary. Where Chapter 18 sections give direction to non-Chapter 18 sections, those sections must be modified to also contain guidance to the equivalent HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions are now utilized, formatting only.

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

None. Base code provisions are now utilized, formatting only.

Impact to industry relative to the cost of compliance with code

None. Base code provisions are now utilized, formatting only.

Requirements

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary direction to applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1808.3 Design loads. Foundations shall be designed for the most unfavorable effects due to the combinations of loads specified in Section 1605.2 or 1605.3 the HVHZ shall comply with Section 1618.9. The dead load is permitted to include the weight of foundations and overlying fill. Reduced live loads, as specified in Sections 1607.10 and 1607.12 shall be permitted to be used in the design of foundations.

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Date Submitted	7/5/2012	**Section**	1810.3.9.4.1	**Proponent**	Michael Goolsby
Chapter	18	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

With the elimination of Chapter 18 HVHZ sections, formatting of certain base code sections becomes necessary. Where Chapter 18 sections give direction to non-Chapter 18 sections, those sections must be modified to also contain guidance to the equivalent HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions are now utilized, formatting only.

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

None. Base code provisions are now utilized, formatting only.

Impact to industry relative to the cost of compliance with code

None. Base code provisions are now utilized, formatting only.

Requirements

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary direction to applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4936 Text Modification

Page: 1

1810. 3.9.4.1 Seismic Reinforcement in Design Category C. For structures assigned to Seismic Design Category C, cast-in-place deep foundationelements shall be reinforced as specified in thissection. Reinforcement shall be provided whererequired by analysis.

A minimum of four longitudinal bars, with a minimum longitudinal reinforcement ratio of 0.0025, shall be provided throughout the minimum reinforced length of the element as defined below starting at the top of the element. The minimum reinforced length of the element shall be taken as the greatest of the following:

1. One-third of the element length;

2. A distance of 10 feet (3048 mm);

3. Three times the least element dimension; and

4. The distance from the top of the element to the point where the design cracking moment determined in accordance with Section 1810.3.9.1 exceeds the required moment strength determined using the load combinations of Section 1605.2 HVHZ shall comply with Section 1618.9.

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S4937

Date Submitted	7/5/2012	**Section**	1810.3.9.4.2	**Proponent**	Michael Goolsby
Chapter	18	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

With the elimination of Chapter 18 HVHZ sections, formatting of certain base code sections becomes necessary. Where Chapter 18 sections give direction to non-Chapter 18 sections, those sections must be modified to also contain guidance to the equivalent HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions are now utilized, formatting only.

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

None. Base code provisions are now utilized, formatting only.

Impact to industry relative to the cost of compliance with code

None. Base code provisions are now utilized, formatting only.

Requirements

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary direction to applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1810.3.9.4.2 Seismic reinforcement in Seismic Design Categories D through F. For structuresassigned to Seismic Design Category D, E or F, cast-in-place deep foundation elements shall be reinforcedas specified in this section. Reinforcementshall be provided where required by analysis.

A minimum of four longitudinal bars, with aminimum longitudinal reinforcement ratio of 0.005,shall be provided throughout the minimum reinforcedlength of the element as defined below startingat the top of the element. The minimumreinforced length of the element shall be taken as thegreatest of the following:

1. One-half of the element length;

2. A distance of 10 feet (3048 mm);

3. Three times the least element dimension; and

4. The distance from the top of the element to the point where the design cracking moment determined in accordance with Section 1810.3.9.1 exceeds the required moment strength determined using the load combinations of Section 1605.2 the HVHZ shall comply with Section 1618.9.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_4937_TextOfModification_1.png

Date Submitted	7/31/2012	**Section**	1816.1.7	**Proponent**	Steven Dwinell
Chapter	18	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Modify language to state that contracts offered for termite protection compy with Chapter 482, F.S., the Florida Structural Pest Control Act.

Rationale

The proposed modification would clarify that contracts offered for termite protection be in compliance with the Florida Structural Pest Control Act, Chapter 482, F.S. Building officials could verify compliance by consulting with the Florida Department of Agriculture and Consumer Services, rather than review and interpret the contract itself. The proposed modification would increase consistency of application of this code provision by allowing this consultation rather than requiring interpretation of contracts by the building official. In addition, termite protection contract requirements are periodically changed when Chapter 482, F.S. and its associated rules are amended. This modification would allow this provision to stay current without additional code modifications.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No fiscal impact is anticipated. The proposed modification would simplify determination of compliance since code officials could consult with the Department of Agriculture and Consumer Services to determine compliance rather than having to review and interpret these contracts.

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

No impact is anticipated. Contracts must already be provided as required by Chapter 482, F.S.

Impact to industry relative to the cost of compliance with code

No impact is anticipated. Contracts must already be provided as required by Chapter 482, F.S.

Requirements

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

The proposed code modification clarifies that termite protection contracts be in compliance with the Florida Structural Pest Control Act, Chapter 482, F.S. Termite protection contracts protect the public by requiring retreatment or damage repair when preventive treatments fail.

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

The proposed code modification improves the code by making interpretation of this provision more consistent, since building officials could verify compliance by consulting with the Florida Department of Agriculture and Consumer Services, rather than review and interpret the contract itself.

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

The proposed modication does not discriminate against legal termite protection contracts since all contracts must be in compliance with Chapter 482, F.S.

Does not degrade the effectiveness of the code

The proposed code modification improves the effectiveness of the code as described above.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5801-G1

Proponent Jim Blaney **Submitted** 8/22/2012 **Attachments** No

Comment:

I am in support of this building code modification. As a pesticide applicator, I am governed by Chapter 482 and new construction building inspectors are responsible to the Florida Building Code. This will tie the two together and eliminate the need to interpret FBC 1816.1.7 and resulting disagreements in those interpretations. It will also allow everyone to be in compliance of the department that they are governed by.

General Comment - 08/09/2012 - 09/23/2012

S5801-G2

Proponent Richard Alsen **Submitted** 8/23/2012 **Attachments** No

Comment:
I strongly support this building code modification as current verbage discriminates against state approved subertanean termite baiting systems. It will allow for easier interpretation. This will bring the two together allowing for compliance for all.

General Comment - 08/09/2012 - 09/23/2012

S5801-G3

Proponent Laura Claypool **Submitted** 9/4/2012 **Attachments** No

Comment:
The wording of having a "signed contract for Five years" provided prior to the pouring of the slab needs to be omitted. As a pest control provider, our contract for baiting in new construction is for first year paid by the builder with four more renewable years upon payment of contract by homeonwer. This is very confussing and up for interpretation by Building Officals looking for a Five Year contract, not accepting "four renewable years". This is holding up homes for builders and allowing officials to interpret our chapter 487. Also is it is not renewed after closing by the homeowner, that is not relavent to the code. Please remove any language stating a five year contract. Allowing pest control compaines wishing to install baiting systems for their builders a smooth process without being denied by inspectors/officals.

General Comment - 08/09/2012 - 09/23/2012

S5801-G4

Proponent Charlene Mertz **Submitted** 9/20/2012 **Attachments** No

Comment:
I am opposed to the proposed modification of section 1816.1.7. As I understand it, there are 3 options for termite protection: liquid soil, wood, and bait stations. The latter, bait stations, offers only notification of a problem, thus delivering zero protection on the actual structure. The soil and wood treatments offer residual protection for several years. The 5 year prepaid warrenty is vital in the protection of the consumer. Given the unstable economic status and challenges of survival consumers face, the proposed change leaves a wide open door for structural damage via termites on an untreated property. Pest Control Companies can demand annual payment or removal of the stations. Leaving the code as is at least offers 5 years inclusive with no additional monies exchanged.

General Comment - 08/09/2012 - 09/23/2012

S5801-G5

Proponent John Cooksey **Submitted** 9/21/2012 **Attachments** No

Comment:
I support of this building code modification. As a pesticide applicator, I am governed by Chapter 482 and new construction building inspectors are responsible to the Florida Building Code. This will tie the two together and eliminate the need to interpret FBC 1816.1.7 and resulting disagreements in those interpretations. It will also allow everyone to be in compliance of the department that they are governed by.

General Comment - 08/09/2012 - 09/23/2012

S5801-G6

Proponent Kidwell Raymond **Submitted** 9/21/2012 **Attachments** No

Comment:
I support the modification.

General Comment - 08/09/2012 - 09/23/2012

S5801-G7

Proponent Blackburn Jude **Submitted** 9/21/2012 **Attachments** No

Comment:
I am opposed to the proposed modification of section 1816.1.7. As I understand it, there are 3 options for termite protection: liquid soil, wood, and bait stations. Bait stations offer only evidence of termite presence after the fact and offer no true preventative measure, this method delivers no protection whatsoever on the actual structure. The soil and wood treatments offer residual protection for several years. The 5 year prepaid warranty is vital in the protection of the consumer. Leaving the code as is at least offers 5 years inclusive with no additional monies exchanged, thus providing consumers protection from exposure to termite damage.

General Comment - 08/09/2012 - 09/23/2012

S5801-G8

Proponent David Cooksey **Submitted** 9/21/2012 **Attachments** No

Comment:
I am strongly in favor of the proposed changes. It allows the agency in charge of regulating our industry to interpret the code that applies to us. This allows greater clarity for the operator and a more consistent interpretation of the code for the consumer. In addition it puts the "greener" termite products (baits) on an even playing field with the liquid termiticides.

General Comment - 08/09/2012 - 09/23/2012

S5801-G9

Proponent Joe Hughes **Submitted** 9/21/2012 **Attachments** No

Comment:
I am a Florida Certified Pest Control Operator with over 25 years experience. I am opposed to the proposed modification to Florida Building Code 1816.1.7. The proposed modification is to make the warranty criteria the same for bait station termite pretreats as it is for soil and wood termite pretreats. Currently if you perform a termite pretreat with bait stations the pest company has to maintain the stations for 5 years. The original purpose of this requirement was to protect the consumer because of the ability for pest companies to remove the stations if the homeowner did not pay for the warranty. If the stations were removed then there would be no termite protection on that house. Wood and soil treatments only require a one year prepaid warranty followed with an option for the homeowner to renew for an additional 4 years. This warranty stipulation is different because both wood and soil treatments are applied to the structure and cannot be removed. If the homeowner decides not to continue the warranty they at least have a treatment on the home that will protect against termite attack. If this change is allowed it will force homeowners to pay for a termite warranty or have all termite protection removed from their home. This could leave thousands of homes in Florida totally unprotected against termite attack. The fact is that most consumers do not have any idea what type of termite treatment the builder has purchased for their new home. They only find out after they have closed on the home . They expect that the price they paid for the home includes a treatment that will protect their home against termite attack. Another interesting fact from an article written in the Sun Sentinel in May of 2000, it was stated that most new homeowners do not renew their termite warranties. This means that if the new home is pretreated with bait stations, the home will be left with no termite protection.

General Comment - 08/09/2012 - 09/23/2012

S5801-G10

Proponent al formella **Submitted** 9/21/2012 **Attachments** No

Comment:
I am in support of this building code modification. As a pesticide applicator, I am governed by Chapter 482 and new construction building inspectors are responsible to the Florida Building Code.

General Comment - 08/09/2012 - 09/23/2012

S5801-G11

Proponent Stacey Miller **Submitted** 9/21/2012 **Attachments** No

Comment:
I am a Certfied Operator for a Pest Control company here in Jacksonville Florida. I am looking in a homeowners perspective about the modification that should NOT go through. This code is to protect the consumer if you change the building code to accomodate bait station users this will NOT protect the consumers. My Opinion is bait stations should not be a stand alone pretreatment method since termites forage randomly and there is no residual left in the soil (under the slab) there are only stations on the exterior. The code should STAND THE SAME and NOT be changed since there is no residual left under the slab at the time of pretreatment with baiting stations. Florida is an excessive moisture state and should require liquid pretreatment for ALL there slabs in my opinion which in turn will protect the homeowner.

General Comment - 08/09/2012 - 09/23/2012

S5801-G12

Proponent Joe Hughes **Submitted** 9/22/2012 **Attachments** No

Comment:
I have been a certified pest control operator in Florida for approximately 45 years and I oppose the modification to section 1816.1.7. I would never offer a bait system on new construction. As a respected pest professional I understand that some consumers may not be able to afford a termite warranty but I don't think they should be left without protection when other treatments would remain effective.. If this change is allowed it will cause many homeowners to lose their termite protection just because they cannot pay for the warranty. Under the current code they are protected for at least 5 years. I would prefer to provide soil or wood treatment so that the homeowner would have continued protection even if they cannot afford the warranty.

General Comment - 08/09/2012 - 09/23/2012

S5801-G13

Proponent Suzanne Graham **Submitted** 9/23/2012 **Attachments** No

Comment:
I support this modification.

This modification has been overlooked during the last 2 code cycles.
This modification is merely codifying what the Florida Building Commission approved back in 2003.

In 2003 this issue came before the Florida Building Commission. I was the original Petitioner of the Declaratory Statement DCA03-DEC-222.

As Petitioner I was seeking clarification regarding the provisions of Section 1816.1, Florida Building Code - Building Volume (2001 as amended 6/30/2003), regarding termite protection.

Petitioner seeks to determine: 1) Whether Section 1816.1, Florida Building Code, requires new construction builders and homeowners choosing termite baiting systems using termiticides registered in Florida and labeled for use as new construction termite control, to be required to contract for five
years of service to comply with the Code; and

2) whether Section 1816.1, Florida Building Code, requires that the standard contract wording required by the Department of Agriculture and Consumer
Services, Chapter 482, Florida Statutes (2002), providing for one year of service and guaranteeing the property owner the option to renew service for no less than an additional four years complies with the Code.

Conclusions of Law:

1) builders choosing termite baiting systems using termiticides registered in Florida and labeled for use as new construction termite control are required to contract for five years of service to comply with the Florida Building Code, however, the Code does not require prepayment;

2) the Florida Building Code Commission has no authority to interpret Chapter 482, Florida Statutes. Contracts for the prevention of subterranean termites in new construction must meet the requirements in Chapter 482, Florida Statutes, and Chapter 5E-14, Florida Administrative Code.

General Comment - 08/09/2012 - 09/23/2012

S5801-G14

Proponent Suzanne Graham **Submitted** 9/23/2012 **Attachments** No

Comment:
I support this modification.

This modification has been overlooked during the last 2 code cycles.
This modification is merely codifying what the Florida Building Commission approved back in 2003.

In 2003 this issue came before the Florida Building Commission. I was the original Petitioner of the Declaratory Statement DCA03-DEC-222.

As Petitioner I was seeking clarification regarding the provisions of Section 1816.1, Florida Building Code - Building Volume (2001 as amended 6/30/2003), regarding termite protection.

Petitioner seeks to determine: 1) Whether Section 1816.1, Florida Building Code, requires new construction builders and homeowners choosing termite baiting systems using termiticides registered in Florida and labeled for use as new construction termite control, to be required to contract for five
years of service to comply with the Code; and

2) whether Section 1816.1, Florida Building Code, requires that the standard contract wording required by the Department of Agriculture and Consumer
Services, Chapter 482, Florida Statutes (2002), providing for one year of service and guaranteeing the property owner the option to renew service for no less than an additional four years complies with the Code.

Conclusions of Law:

1) builders choosing termite baiting systems using termiticides registered in Florida and labeled for use as new construction termite control are required to contract for five years of service to comply with the Florida Building Code, however, the Code does not require prepayment;

2) the Florida Building Code Commission has no authority to interpret Chapter 482, Florida Statutes. Contracts for the prevention of subterranean termites in new construction must meet the requirements in Chapter 482, Florida Statutes, and Chapter 5E-14, Florida Administrative Code.

General Comment - 08/09/2012 - 09/23/2012

S5801-G15

Proponent Priscilla Wenner **Submitted** 9/23/2012 **Attachments** No

Comment:
I am opposed to the proposed modification to section 1816.1.7. I am a homeowner that is retired and living on social security. While I know it is important to maintain a termite warranty on my home sometimes finances prevent people from maintaining their warranty. When I bought my new home I had no idea what type of termite treatment was performed. If it had been a bait system I would not had known that it would be necessary to continue a maintenance program to keep my home protected from termites. I would have been especially upset to find out that the pest company could remove the stations and leave my home totally unprotected against termites if I could not pay for the warranty. I would be forced to continue the coverage or lose all protection for termites on my home. I would probably have to either have no protection on my house or I would have to eliminate one of my prescription medications or lower my grocery expense. At least with a soil or wood treatment my home would be protected even if I could not afford the warranty. When you buy a home you expect it to have some type of protection for termites that cannot be removed. If you allow this change it will have devastating effects on senior citizens in Florida.

General Comment - 08/09/2012 - 09/23/2012

S5801-G16

Proponent Marcie Downing **Submitted** 9/23/2012 **Attachments** No

Comment:
I support this modification.
The proposed building code modification will create a consistent interpretation of the requirements for all termite treatments used for new construction termite protection. Florida State Statute Ch 482/ FAC 5E-14.105.3 requires that pest control licensees provide a contract to property owners for all new construction termite treatments. This contract must include a warranty for retreatment and/or retreatment and damage repair for one year with the option for automatic renewal for up to four additional years upon payment of an annual renewal fee. At this time, there is an inequitable condition stipulated for a subset of products that already comply with Florida Department of Agriculture and Consumer Services (FDACS) Statute (Chapter 482). This modification will also redirect disputed termite contract language to the FDACS whose function it is to regulate all pest control contracts. Lastly, the proposed modification would codify the Declaratory Statement DCA03-DEC-222 which was passed in 2003.

1816.1.7 If a registered termiticide formulated and registered as a bait system is used for subterranean termite prevention, Sections 1816.1.1 through 1816.1.6 do not apply; however, a signed contract assuring the installation, maintenance and monitoring of the baiting system that is in compliance with the requirements of Chapter 482, F.S. ~~for a minimum of five years from the issue of the certificate of occupancy~~ shall be provided to the building official prior to the pouring of the slab, and the system must be installed prior to final building approval. If the baiting system directions for use require a monitoring phase prior to installation of the pesticide active ingredient, the installation of the monitoring phase components shall be deemed to constitute installation of the system.

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Date Submitted	7/5/2012	**Section**	1901.1	**Proponent**	Michael Goolsby
Chapter	19	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Delete HVHZ Sections

Rationale

Elimination of reference to remaining HVHZ sections; the sections are being deleted by a separate modification.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions are now utilized, formatting only.

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

None. Base code provisions are now utilized, formatting only.

Impact to industry relative to the cost of compliance with code

None. Base code provisions are now utilized, formatting only.

Requirements

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

N/A – Removing HVHZ sections, base code encompasses and includes all previous HVHZ requirements.

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

N/A – Removing HVHZ sections, base code encompasses and includes all previous HVHZ requirements.

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

N/A – Removing HVHZ sections, base code encompasses and includes all previous HVHZ requirements.

Does not degrade the effectiveness of the code

N/A – Removing HVHZ sections, base code encompasses and includes all previous HVHZ requirements.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1901.1 Scope.

The provisions of this chapter shall govern the materials, quality control, design and construction of concrete used in structures.

~~Exception: Buildings and structures located within the high-velocity hurricane zone shall comply with the provisions of Sections 1917 and 1919 through 1929.~~

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S4942

Date Submitted	7/5/2012	**Section**	1908.4	**Proponent**	Michael Goolsby
Chapter	19	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section Formatting

Rationale

With the elimination of Chapter 19 HVHZ sections, formatting of certain base code sections becomes necessary. Where Chapter 19 sections give direction to non-Chapter 19 sections, those sections must be modified to also contain direction to the equivalent HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Code provisions are now found in the base code, formatting only.

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

None. Code provisions are now found in the base code, formatting only.

Impact to industry relative to the cost of compliance with code

None. Code provisions are now found in the base code, formatting only.

Requirements

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary guidance applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4942 Text Modification

1908.4 Increase in allowable load. Increase of the values in Table 1908.2 by one-third is permitted where the provisions of Section 1605.3.2, the HVHZ shall comply with Section 1618.9 permit an increase in allowable stress for wind loading.

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Date Submitted	7/24/2012	**Section**	1913	**Proponent**	T Stafford
Chapter	19	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Reinstates requirements that gable endwalls be structurally continuous between points of lateral support. This language currently exists in the 2010 FBCB.

Rationale

This language is currently contained in the 2010 FBC. No new requirements are being proposed. This proposal reinstates provisions for concrete gable end walls. Sections 1913.1 and 1913.2 provide general direction regarding the design of concrete structures in high wind regions. Section 1913.3 specifically addresses gable end walls. This language has actually existed in the Florida Building Code since the first edition (2001). During the development of the 2001 FBC, a newspage article highlighted some deficiencies throughout the state with regard to the design of gable end walls. The Structural TAC crafted this language to address these deficiencies. The language clarifies that if the gable end wall is not structural continuous from the floor to the roof, bracing of the discontinuity is required.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

SECTION 1913

SPECIAL WIND PROVISIONS FOR CONCRETE

1913.1 Reinforced concrete components. The design and construction of reinforced concrete components for buildings sited in areas where the ultimate design wind speed, Vult, is greater than 115 (45 m/s) in accordance with Figure 1609A, 1609B, or 1609C shall conform to the requirements of ACI 318 or with Section 1609.1.1, Exception 1, as applicable, except as modified in this section.

1913.2 Insulated concrete form wall. Insulated concrete form (ICF) wall construction for buildings shall be in accordance with ACI 318 or with Section 1609.1.1, Exception 1, as applicable.

1913.3 Gable endwalls.

1913.3.1 General. Gable endwalls shall be structurally continuous between points of lateral support.

1913.3.2 Cathedral endwalls. Gable endwalls adjacent to cathedral ceilings shall be structurally continuous from the uppermost floor to ceiling diaphragm or to the roof diaphragm.

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S4941

Date Submitted	7/5/2012	**Section**	1927 and 1928	**Proponent**	Michael Goolsby
Chapter	19	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Deletion of HVHZ sections

Rationale

Deletion of all Chapter 19 HVHZ sections in order to utilize base code provisions which encompass and include all HVHZ sections.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. The base code encompasses all previous HVHZ provisions and will be utilized. Formatting only.

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

None. The base code encompasses all previous HVHZ provisions and will be utilized. Formatting only.

Impact to industry relative to the cost of compliance with code

None. The base code encompasses all previous HVHZ provisions and will be utilized. Formatting only.

Requirements

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

This modification removes all HVHZ sections and utilizes the base code provisions for the proper design and installation of concrete.

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

This modification removes all HVHZ sections and utilizes the base code provisions for the proper design and installation of concrete.

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

This modification removes all HVHZ sections and utilizes the base code provisions for the proper design and installation of concrete.

Does not degrade the effectiveness of the code

This modification removes all HVHZ sections and utilizes the base code provisions for the proper design and installation of concrete.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4941 Text Modification

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~~**SECTION 1927**~~

~~**HIGH-VELOCITY HURRICANE ZONES — PRECAST CONCRETE UNITS**~~

~~**1927.1 General.**~~

~~**1927.1.1** Precast concrete units shall comply with the minimum requirements set forth in this section, and the standard set forth in Section 1920.3.~~

~~**1927.1.2** All precast concrete elements and their attachments (including imbedments) to the main structural frame shall be designed by, and bear the seal of a Florida-registered architect or a Florida-registered engineer, which architect or engineer shall be proficient in structural design. The design shall be based on rational analysis for loads set forth in Chapter 16 (High-Velocity Hurricane Zones). The architect/engineer of record may delegate this responsibility to a Florida-registered delegated engineer. In that case, shop drawings and design calculations prepared by such delegated engineer shall be reviewed and approved by the architect and the engineer of record.~~

~~**1927.1.3** Only the material cast monolithically with the units at the time of manufacture shall be used in computing stresses unless adequate and approved shear transfer is provided.~~

~~**1927.1.4** The building official may promulgate and set forth in writing such reasonable rules for requiring tests to be made by an approved laboratory as he may consider necessary to insure compliance with this code or uniformity of the products produced. The quantity of tests shall be based on consideration of safety or volume of output.~~

~~**1927.1.5** The building official or his or her representative shall have free access to the plant of any producer at all hours of normal operation, and failure to permit such access shall be cause for revocation of approval.~~

~~**1927.1.6** Failure of any product to satisfy in every respect the quality prescribed, or failure to conform with plans and specifications, shall be cause for rejection of the products.~~

~~**1927.2** Statements of responsibilities of architects and professional engineers on design of structures using precast concrete components.~~

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S4941 Text Modification

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~~**1927.2.1** The structural construction documents shall indicate the configuration of precast components and shall include details of supports, anchors and connections for those components. Permit documents shall include sufficient details describing the attachment of precast units (including embedments) to the main structure.~~

~~**1927.2.2** The precast permit documents shall bear the signature and seal of the professional architect or engineer charged with the responsibility of the design of the precast units. The architect or engineer of record may delegate this responsibility to a Florida-registered delegated engineer. In that case, shop drawings and design calculations prepared by such delegated engineer shall be reviewed and approved by the architect and/or the engineer of record as an indication that his or her intent has been understood and that the specified criteria have been used.~~

~~**1927.2.3** The structural submittals shall include component details, calculations and fabrication and erection drawings. All such submittals shall identify the specific project.~~

~~**1927.3 Aggregate.** The maximum size of the aggregate for precast units shall be not larger than one-third of the narrowest dimension between sides of the forms of the member in which the unit is cast nor larger than three-fourths of the minimum clear spacing between reinforcing bars and sides of the forms, except that where concrete is placed by means of high frequency vibration, the maximum size of the aggregate shall not be larger than one-half of the narrowest dimension between sides of the form.~~

~~**1927.5.3** The use of precast structural units not complying with ACI requirements or having visible cracks, honeycomb, exposed reinforcing except at ends or, with a compressive section dimension more than 1/8 inch (3.1 mm) less than specified dimension shall not be permitted.~~

~~**1927.6.3** To ensure the eventual placement of the units in the structure without damage, the handling shall be done in such a manner that bending shall be reduced to a minimum or prevented.~~

~~**1927.8 Cutting of holes.** No openings or channels not provided for in the structural design shall be made on the job without the specific approval of the professional engineer in accordance with his or her written, detailed instructions covering such work.~~

~~**1927.10 Bridging.** Joists shall be secured against lateral displacement by cast-in-place bridging, and such bridging shall be spaced not to exceed 32 times the width of the compression flange of the joist except that for roof systems, cast-in-place portland concrete slabs embedding the top flanges not less than 1/2 inch (12.7 mm), or steel inserts cast in the joist heads to which bulb-tees supporting gypsum decks are welded, shall be accepted in lieu of bridging.~~

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~~**1927.12 Inspections.**~~

~~**1927.12.1** All structural precast units shall be inspected for quality control by an architect or professional engineer qualified to perform these inspections prior to the concrete placement at the casting yard.~~

~~**1927.12.2** All structural precast units and their attachments to the main structure shall be inspected after erection, but before concealment. Such inspections shall be performed by a Florida registered architect or professional engineer.~~

~~**SECTION 1928**~~

~~**HIGH VELOCITY HURRICANE ZONES — PRESTRESSED CONCRETE**~~

~~**1928.1.1** All prestressed structural items shall be designed by a registered professional engineer. Openings or channels not provided for in the structural design shall not be made on the job without the specific approval of the design professional engineer.~~

~~**1928.1.2** The building official may promulgate and set forth in writing such reasonable rules for requiring tests to be made by an approved laboratory as he or she may consider necessary to insure compliance with this code or uniformity of the products produced.~~

~~**1928.1.3** The building official or his or her representative shall have free access to the plant of any producer at all hours of normal operation. Failure to permit such access shall be cause for revocation of approval.~~

~~**1928.1.4** Failure of any product to satisfy the quality prescribed or failure to conform to plans and specifications shall be cause for rejection of the product.~~

~~**1928.2** Statements of responsibilities of architects and professional engineers on design of cast-in-place post-tensioned concrete structural systems.~~

~~**1928.2.1** The structural construction documents shall show the magnitude and location of all prestressing forces and all design assumptions.~~

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~~**1928.2.2** The structural engineer of record and/or the architect of record shall require the submission of calculations and installation drawings from a specialty engineer for post-tensioning systems for review by the structural engineer of record and/or the architect of record. Review is an indication that his or her intent has been understood and that the specified criteria have been used. The installation drawings shall provide full details of materials to be used including necessary accessories and instructions for construction and shall identify the specific project and shall bear the impressed seal, signature and date of the specialty engineer who prepared them.~~

~~**1928.2.3** It is the responsibility of the structural engineer of record and/or the architect of record to review the post-tensioning system installation drawings so that the drawings are coordinated with the reinforcing steel shop drawings.~~

~~**1928.2.4** Determining the effect of post-tensioning on other parts of the building is the responsibility of the structural engineer of record and/or the architect of record.~~

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Date Submitted	7/31/2012	**Section**	2001 and 2002	**Proponent**	Joseph Belcher
Chapter	20	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Table 2002.4 Mod 5781

Summary of Modification

Retains FBC design criteria for aluminum structures.

Rationale

The changes are a part of a series of changes incorporating the results of engineering analysis of data generated during wind tunnel testing commissioned by the Aluminum Association of Florida and conducted by Dr. Timothy Reinhold, PE, PhD, at Clemson and Virginia Tech wind tunnels and Charley Everly, PE. Additionally, the sections contain provisions proposed by the Aluminum Association and others with an interest in the industry. The provisions have been in the code for a number of years and are field tested and effective.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The change will have no impact on the cost of compliance relative to the enforcement of the code because they are currently in effect.

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

The change will have no impact to owners relative to the cost of compliance with the code because they are currently in effect.

Impact to industry relative to the cost of compliance with code

The change will have no impact to owners relative to the cost of compliance with the code because they are currently in effect.

Requirements

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

The proposal benefits the public safety by establishing design criteria for aluminum screen enclosures based on scientific testing and engineering analysis.

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

The proposal strengthens and improves the code by establishing design criteria for aluminum screen enclosures based on scientific testing and engineering analysis.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code by establishing design criteria for aluminum screen enclosures based on scientific testing and engineering analysis.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

SECTION 2001

GENERAL

2001.1 Scope. This chapter shall govern the quality, design, fabrication and erection of aluminum. The quality, design, fabrication and erection of aluminum used structurally in buildings or structures shall conform to good engineering practice, the provisions of this chapter and other applicable requirements of this code.

SECTION 2002

MATERIALS

2002.1 General. Aluminum used for structural purposes in buildings and structures shall comply with AA ASM 35 and AA ADM 1. The ***nominal loads*** shall be the minimum design loads required by Chapter 16. The use of aluminum alloys not listed in the manual shall be permitted provided their standard of performance is not less than those required in the manual and the performance is substantiated to the satisfaction of the building official.

2002.2.1 Definitions

PRIMARY MEMBER. Structural framing members providing structural support to other members and/or surfaces of a structure including, but not limited to beams, posts, columns, joists, structural gutters, headers, eave rail, purlins, roof brace.

SECONDARY MEMBERS. Structural framing members which do not provide basic support for the entire structure, generally including, but not limited to, such members as kickplate rails, chair rails, roof or wall panels, wall brace.

STRUCTURAL MEMBERS. Members or sections that provide support to an assembly and/or resist applied loads.

2002.3 Screen enclosures.

2002.3.1

Actual wall thickness of extruded aluminum members shall be not less than 0.040 inch (1 mm).

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2002.3.2 Reserved.

2002.3.3 Vinyl and acrylic panels shall be removable.

Removable panels shall be identified as removable by a decal. The identification decal shall essentially state "Removable panel SHALL be removed when wind speeds exceed 75 mph (34 m/s)." Decals shall be placed such that the decal is visible when the panel is installed.

2002.4 Loads.

Structural members supporting screened enclosures shall be designed for wind in both of two orthogonal directions using the pressures given in Table 2002.4. Each primary member shall also be designed for a 300 pound (1.33 kN) load applied vertically downward along any 1 foot (305 mm) of any member, not occurring simultaneously with wind load.

Exception: In addition to wind pressures, purlins shall also be designed for a 200 pound (0.89 kN) load applied vertically downward along any 1 foot (305 mm) of any member, not occurring simultaneously with wind load.

2002.4.1 Design Guide

The following design guides shall be accepted as conforming to accepted engineering practices:

AAF Guide to Aluminum Construction in High Wind Areas.

2002.5 Wall panels.

The minimum thickness for formed sheet aluminum structural wall panels shall be not less than 0.024 inch (0.6 mm), subject to approved tolerances.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5795_TextOfModification_2.png

The State of Florida has been called the birthplace of the screen enclosure as we know it. While the provisions for screen enclosures have not been approved by the ICC, they were submitted in the past. The base code does not address these structures found throughout Florida. Florida's climate is conducive to outdoor activities; however, the insects make enjoyment of the outdoors difficult. Screen enclosures serve the purpose of permitting citizens to enjoy the outdoors without the pests. While common sense seems to dictate these structures are not meant to be habitable, the industry has encountered numerous attempts to classify them as habitable spaces and apply needlessly restrictive requirements.

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S5795 Prior Code Version question. submitted or attempted to be included

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

The provisions were submitted in the past and rejected in the International Building Code. A number of the provisions have been adopted as an appendix in the International Residential Code Appendix H. The Commission does not adopt appendices.

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Date Submitted	7/30/2012	**Section**	2002.6	**Proponent**	Jim Heise
Chapter	20	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

without this, screen enclosures can be misinterpreted as "window" products as has occurred in other states

Rationale

Language carried over from the 2010 Code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

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

removes any confusion as to the difference between "sunrooms" and "windows"

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

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

Helps protect the health and welfare of the public by having products tested and labeled to these standards.

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

This will improve the code by reinstating these standards that exist in the Florida Code with the current edition.

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

This modification does not discriminate as it allows the use of any product that shows proof of meeting the code established standards.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2002.6 Sunrooms. Sunrooms shall comply with AAMA/NPEA/NSA 2100 ~~with~~ and the structural requirements and testing provisions of Chapter 5. ~~modified to incorporate ASCE 7.~~

AAMA 2100, Section 5.2.1 Wind Loads: Modify Section 5.2.1 as follows:

5.2.1 Wind Loads: Basic wind speed in miles per hour (mph) or kilometer per hour (kph) shall be determined ~~by the local or regional building authority~~ in accordance with Section 1609.3. Sunrooms including exposed structures, components, cladding and roof covering shall be designed to resist the wind loads as established in Section 1609.1.1 ~~ASCE 7-98 or local wind load criteria~~.

For the purpose of applying the criteria of the AAMA Standard for sunrooms based on the intended use, ~~S~~ sunrooms shall be categorized in one of the following categories.

[4279]

Category I: A roof or a covering of an outdoor space. The openings shall be permitted to be enclosed with insect screening or 0.5 mm (20 mil) maximum thickness plastic film. The space is defined as nonhabitable and unconditioned.

Category II: A roof or a covering of an outdoor space with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The space is defined as nonhabitable and unconditioned.

Category III: A roof or a covering of an outdoor space with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The sunroom complies with additional requirements for forced-entry resistance, air-leakage resistance and water-penetration resistance. The space is defined as nonhabitable and unconditioned.

Category IV: A roof or a covering of an outdoor space with enclosed walls. The sunroom is designed to be heated and/or cooled by a separate temperature control or system and is thermally isolated from the primary structure. The sunroom complies with additional requirements for forced-entry resistance, water-penetration resistance, air-leakage resistance, and thermal performance. The space is defined as habitable and conditioned.

Category V: A roof or a covering of an outdoor space with enclosed walls. The sunroom is designed to be heated and/or cooled and is open to the main structure. The sunroom complies with additional requirements for forced-entry resistance, water-penetration resistance, air-leakage resistance, and thermal performance. The space is defined as habitable and conditioned.

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Date Submitted	7/30/2012	**Section**	2002.6	**Proponent**	Joseph Belcher
Chapter	20	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Carries forward adoption of AAMA 2100; Carries forward and updates sunroom categories.

Rationale

The proposal brings forward the design criteria and categories of sunrooms which are not addressed in the base code. (AAMA 2100 adopted FBC 2004; AAMA Categories placed in FBC 2007) The sunroom categories are updated to the updated AAMA 2100-11. Originally, design criteria for sunrooms was provided. The industry encountered difficulties with widely varying interpretations regarding habitable versus non-habitable sunrooms among jurisdictions. Some jurisdictions claimed the categories of the standard conflicted with the building code and that the code classified sunrooms as habitable. Although there is (and was) nothing in the code stating a sunroom is a habitable space, there is a Declaratory Statement stating sunrooms can be designed as non-habitable spaces. (DCA05-DEC-235).To deal with these issues the industry proposed placing the sunroom categories contained in the adopted standard directly into the code. Inclusion of the AAMA Sunroom Categories within the code has almost totally eliminated the problem of improper classification.

Due to abuses by some, such as adding air conditioning to a sunroom after the final inspection and C of O, some jurisdictions required all sunrooms to meet the provisions for habitable spaces. The result was an unnecessary financial burden on the consumer that simply wanted an non-conditioned space providing shelter from the elements for recreational use. To assist jurisdictions in citing after the fact violations, the language requiring the categorization of the sunroom at the time of permit application was included. This proposal is intended to preserve all that work to benefit enforcement, the public, and the industry.

The base code does not adequately address sunroom construction.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The change will have no impact on the cost of compliance relative to the enforcement of the code since the provisions have been in effect for a number of years.

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

No impacts since the provisions are currently and have been in effect for a number of years.

Impact to industry relative to the cost of compliance with code

No impacts since the provisions are currently and have been in effect for a number of years.

Requirements

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

The proposal retains design criteria and the categories for sunrooms. The property owner or another responsible party will categorize the sunroom at permit application providing the public reasonable alternates for constructing sunrooms.

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

The proposal strengthens the code by adding language from an adopted standard for clarification and thereby assisting in interpretation of the code.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code by providing clarifying language to assist in the correct interpretation of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2002.6 Sunroom design.

2002.6.1 Sunrooms shall comply with AAMA/NPEA/NSA 2100.

2002.6.2 For the purpose of applying the criteria of the AAMA/NPEA/NSA 2100, sunrooms shall be categorized in one of the following categories by the permit applicant, design professional or the property owner where the sunroom is being constructed.

Category I: A Thermally Isolated Sunroom with walls that are either open or enclosed with insect screening or 0.5 mm (20 mil) maximum thickness plastic film. The space is defined as a non-habitable, non-conditioned sunroom.

Category II: A Thermally Isolated Sunroom with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The space is defined as a non-habitable, non-conditioned sunroom.

Category III: A Thermally Isolated Sunroom with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The sunroom fenestration complies with additional requirements for air infiltration resistance and water penetration resistance. The space is defined as a non-habitable, non-conditioned sunroom.

Category IV: A Thermally Isolated Sunroom with enclosed walls. The sunroom is designed to be heated and or cooled by a separate temperature control or system and is thermally isolated from the primary structure. The sunroom fenestration complies with additional requirements for air infiltration resistance, water penetration resistance, and thermal performance. The space is defined as a non-habitable and conditioned sunroom.

Category V: A Sunroom with enclosed walls. The sunroom is designed to be heated and or cooled and is open to the main structure. The sunroom fenestration complies with additional requirements for air infiltration resistance, water penetration resistance, and thermal performance. The space is defined as a habitable and conditioned sunroom.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5792_TextOfModification_1.png

The base code definition does not address the sunroom most commonly built in throughout Florida. The modified definition has been in the last three editions of the FBC and elimination of it would have a severely negative impact on the industry. The climate of Florida is not conducive to glass roofs on sunrooms.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5792_PQ2_Sunroom_Def_Geo_Data_IBC_IRC_1.png

S5792 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

Page: 1

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Date Submitted	7/6/2012	**Section**	2003.6.3	**Proponent**	Michael Goolsby
Chapter	20	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Formatting HVHZ reference necessary to maintain base code continuity.

Rationale

Formatting HVHZ reference necessary to maintain base code continuity.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Renumbering of section to accommodate base code expansion.

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

None. Renumbering of section to accommodate base code expansion.

Impact to industry relative to the cost of compliance with code

None. Renumbering of section to accommodate base code expansion.

Requirements

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

N/A – Formatting only

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

N/A – Formatting only

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

N/A – Formatting only

Does not degrade the effectiveness of the code

N/A – Formatting only

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4955 Text Modification

2003.6.3 Aluminum members shall be limited by the deflections set forth in Section 1615~~6~~.3.

Page: 1

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Date Submitted	7/6/2012	**Section**	2003.8.2.1	**Proponent**	Michael Goolsby
Chapter	20	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section Formatting

Rationale

Formatting HVHZ reference necessary to maintain base code continuity.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Renumbering of section to accommodate base code expansion.

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

None. Renumbering of section to accommodate base code expansion.

Impact to industry relative to the cost of compliance with code

None. Renumbering of section to accommodate base code expansion.

Requirements

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

None. Renumbering of section to accommodate base code expansion.

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

None. Renumbering of section to accommodate base code expansion.

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

None. Renumbering of section to accommodate base code expansion.

Does not degrade the effectiveness of the code

None. Renumbering of section to accommodate base code expansion.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4956 Text Modification

2003.8.2.1 Aluminum sections spanning between supports shall be limited in span to satisfactorily support the positive and negative loads set forth in Chapter 16 (High- Velocity Hurricane Zones). The deflection of decking shall not exceed that set forth in Section 1613~~6~~.

Page: 1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_4956_TextOfModification_1.png

Date Submitted	7/30/2012	**Section**	Table 2002.4	**Proponent**	Joseph Belcher
Chapter	20	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Brings forward the table providing design wind pressures for screened enclosures.

Rationale

The base code does not address this unique structure so commonly found in Florida. The State of Florida has been referred to as the birthplace of the screen enclosure as we know it. The industry began in Florida and is slowly spreading to other states with temperate climates. The provisions have been rejected by the ICC building code change committee in the past.
The proposal brings forward provisions approved in the FBCB 2001. The base code does not address screen enclosures which are very common construction in Florida. The change incorporates requirements for the design of screen enclosures based on an engineering analysis of wind tunnel testing. The work was commissioned by the Aluminum Association of Florida and conducted at the Clemson and Virginia Tech wind tunnels by Dr. Timothy Reinhold, PE, PhD, and Charley Everly, PE.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The change will have no impact on the cost of compliance relative to the enforcement of the code since the provisions have been in effect since the 2001 FBC.

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

The change will have no impact to owners on the cost of compliance relative to the enforcement of the code since the provisions have been in effect since the 2001 FBC.

Impact to industry relative to the cost of compliance with code

The change will have no impact on industry on the cost of compliance relative to the enforcement of the code since the provisions have been in effect since the 2001 FBC.

Requirements

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

The proposal has a reasonable and substantial connection with the welfare of the general public by providing design criteria for a very popular type construction in Florida not addressed by the base code.

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

The proposal strengthens and improves the code by providing design criteria for a very common type construction in Florida.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code by providing design criteria for a very common type construction in Florida.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5781 Text Modification

Page: 1

Table 2002.4
DESIGN WIND PRESSURES SCREENED ENCLOSURES [a, b, f, g, h]

(STRENGTH DESIGN OR LRFD ONLY)

For Table 2002.4 see uploaded file.

For SI: 1 pound per square foot = 9.479 kN/m2.

NOTES:

a. Pressures apply to enclosures with a mean enclosure roof height of 30 feet (10 m). For other heights, multiply the pressures in this table by the factors in Table 2002.4A.

b. Apply horizontal pressures to the area of the enclosure projected on a vertical plane normal to the assumed wind direction, simultaneously inward on the windward side and outward on the leeward side.

c. Apply vertical pressures upward and downward to the area of the enclosure projected on a horizontal plane.

d. Apply horizontal pressures simultaneously with vertical pressures.

e. Table pressures are MWFRS Loads. The design of solid roof panels and their attachments shall be based on component and cladding loads for enclosed or partially enclosed structures as appropriate.

f. Table pressures apply to 20 × 20 × 0.013" mesh screen. For 18 ×14 × 0.013" mesh screen, pressures on screen surfaces may be multiplied by 0.88. For screen densities greater than 20 × 20 × 0.013", use pressures for enclosed buildings.

g. Table pressures may be interpolated using ASCE 7 methodology.

h. For allowable stress design (ASD) pressures shall be permitted to be multiplied by 0.6.

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Proposed Modification to the Florida Building Code

Modification #:

Name: Joseph D. Belcher
Address: 41 Oak Village Boulevard Homosassa, 34446
E-mail: Joe@JDBCodeservices.com
Phone: 352-450-2631
Fax: 813-925-4152
Code: Florida Building Code - Building
Section #: 2002.4

Text of Modification [additions underlined; deletions ~~stricken~~]:

Table 2002.4
DESIGN WIND PRESSURES SCREENED ENCLOSURES [a, b, f, g, h]
(STRENGTH DESIGN OR LRFD ONLY)

_	ULTIMATE DESIGN WIND SPEED V_{ult} (mph)																				
	110			120			130			140			150			160			170		
Surface	Design Pressures by Exposure Category (psf)																				
	B	C	D	B	C	D	B	C	D	B	C	D	B	C	D	B	C	D	B	C	D
Horizontal Pressures on Windward Surfaces [d]	17	24	28	20	28	33	23	32	38	27	38	44	31	43	51	36	49	58	40	56	66
Horizontal Pressures on Leeward Surfaces [d]	13	18	21	15	22	26	20	26	31	21	29	34	22	34	40	25	39	46	29	44	52
Vertical Pressures on Screen Surfaces [c]	4	7	8	6	8	9	6	9	11	8	11	12	9	12	14	10	14	16	11	15	18
Vertical Pressures on Solid Surfaces [e]	14	19	23	17	23	27	20	27	32	23	32	37	25	36	42	29	41	48	33	46	54

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5781_Text_Mod__Table_2002.4_Scn_Enc_Wind_Design_Loads_1.png

For SI: 1 pound per square foot = 9.479 kN/m2.

NOTES:

a. Pressures apply to enclosures with a mean enclosure roof height of 30 feet (10 m). For other heights, multiply the pressures in this table by the factors in Table 2002.4A.

b. Apply horizontal pressures to the area of the enclosure projected on a vertical plane normal to the assumed wind direction, simultaneously inward on the windward side and outward on the leeward side.

c. Apply vertical pressures upward and downward to the area of the enclosure projected on a horizontal plane.

d. Apply horizontal pressures simultaneously with vertical pressures.

e. Table pressures are MWFRS Loads. The design of solid roof panels and their attachments shall be based on component and cladding loads for enclosed or partially enclosed structures as appropriate.

f. Table pressures apply to 20 × 20 × 0.013" mesh screen. For 18 ×14 × 0.013" mesh screen, pressures on screen surfaces may be multiplied by 0.88. For screen densities greater than 20 × 20 × 0.013", use pressures for enclosed buildings.

g. Table pressures may be interpolated using ASCE 7 methodology.

h. For allowable stress design (ASD) pressures shall be permitted to be multiplied by 0.6.

Fiscal Impact Statement [Provide documentation of the costs and benefits of the proposed modifications to the code for each of the following entities. Cost data should be accompanied by a list of assumptions and supporting documentation. Explain expected benefits.]:

A. Impact to local entity relative to enforcement of code: The change will have no impact on the cost of compliance relative to the enforcement of the code since the provisions have been in effect since the 2001 FBC.

B. Impact to building and property owners relative to cost of compliance with code: No impacts since the provisions have been in effect since the 2001 FBC.

C. Impact to industry relative to cost of compliance with code: No impacts since the provisions have been in effect since the 2001 FBC.

D. Impact to small business: No impacts since the provisions have been in effect since the 2001 FBC.

Rationale [Provide an explanation of why you would like this Proposed Modification to the Florida Building Code.]: The base code does not address this unique structure so commonly found in Florida. The State of Florida has been referred to as the birthplace of the screen enclosure as we know it. The industry began in Florida and is slowly spreading to other states with temperate climates. The provisions have been rejected by the ICC building code change committee in the past.

The proposal brings forward provisions approved in the FBCB 2001. The base code does not address screen enclosures which are very common construction in Florida. The change incorporates requirements for the design of screen enclosures based on an engineering analysis of wind tunnel testing. The work was commissioned by the Aluminum Association of Florida and conducted at the Clemson and Virginia Tech wind tunnels by Dr. Timothy Reinhold, PE, PhD, and Charley Everly, PE.

Please explain how the proposed modification meets the following requirements:

1. Has a reasonable and substantial connection with the health, safety, and

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5781_Text_Mod__Table_2002.4_Scn_Enc_Wind_Design_Loads_2.png

welfare of the general public: The proposal has a reasonable and substantial connection with the welfare of the general public by providing design criteria for a very popular type construction in Florida.

2. **Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction: The proposal strengthens and improves the code by providing design criteria for a very common type construction in Florida.**

3. **Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities: The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.**

4. **Does not degrade the effectiveness of the code: The proposal increases the effectiveness of the code by providing design criteria for a very common type construction in Florida.**

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5781_Text_Mod__Table_2002.4_Scn_Enc_Wind_Design_Loads_3.png

The base code definition does not address screen enclosures adequately and they are a common structure throughout Florida. The provisions are the result of scientific investigation specifically geared toward developing criteria for the construction of wind resistant screen enclosures. The fact that there are so many screen enclosures constructed in Florida and that the entire state is a hurricane prone region merits Florida specific provisions for the design of such structures.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5781_PQ2_ScreenEnc_Struct_Geo_Data_IBC_IRC_1.png

S5781 Prior Code Version question. submitted or attempted to be included

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

The provisions were submitted in the past and rejected in the International Building Code. A number of the provisions have been adopted as an appendix in the International Residential Code Appendix H. The Commission does not adopt appendices.

Page: 1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5781_PQ3_ScreenEnc_Submitted_IBC_IRC_1.png

Date Submitted	7/31/2012	**Section**	Table 2002.4	**Proponent**	Joseph Belcher
Chapter	20	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Revises Note c of Mod 5781

Rationale

The base code does not address this unique structure so commonly found in Florida. The State of Florida has been referred to as the birthplace of the screen enclosure as we know it. The industry began in Florida and is slowly spreading to other states with temperate climates. The provisions have been rejected by the ICC building code change committee in the past.
The proposal brings forward provisions approved in the FBCB 2001. The base code does not address screen enclosures which are very common construction in Florida. The change incorporates requirements for the design of screen enclosures based on an engineering analysis of wind tunnel testing. The work was commissioned by the Aluminum Association of Florida and conducted at the Clemson and Virginia Tech wind tunnels by Dr. Timothy Reinhold, PE, PhD, and Charley Everly, PE.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The change will have no impact on the cost of compliance relative to the enforcement of the code since the provisions have been in effect since the 2001 FBC.

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

No impacts since the provisions have been in effect since the 2001 FBC.

Impact to industry relative to the cost of compliance with code

No impacts since the provisions have been in effect since the 2001 FBC.

Requirements

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

The proposal has a reasonable and substantial connection with the welfare of the general public by providing design criteria for a very popular type construction in Florida.

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

The proposal strengthens and improves the code by providing design criteria for a very common type construction in Florida.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code by providing design criteria for a very common type construction in Florida.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

S5905 Text Modification

Page: 1

Table 2002.4
DESIGN WIND PRESSURES SCREENED ENCLOSURES [a, b, f, g, h]

(STRENGTH DESIGN OR LRFD ONLY)

See uploaded file for table

For SI: 1 pound per square foot = 9.479 kN/m2.

NOTES:

a. Pressures apply to enclosures with a mean enclosure roof height of 30 feet (10 m). For other heights, multiply the pressures in this table by the factors in Table 2002.4A.

b. Apply horizontal pressures to the area of the enclosure projected on a vertical plane normal to the assumed wind direction, simultaneously inward on the windward side and outward on the leeward side.

c. Apply vertical pressures upward or downward to the area of the enclosure projected on a horizontal plane.

d. Apply horizontal pressures simultaneously with vertical pressures.

e. Table pressures are MWFRS Loads. The design of solid roof panels and their attachments shall be based on component and cladding loads for enclosed or partially enclosed structures as appropriate.

f. Table pressures apply to 20 × 20 × 0.013" mesh screen. For 18 ×14 × 0.013" mesh screen, pressures on screen surfaces may be multiplied by 0.88. For screen densities greater than 20 × 20 × 0.013", use pressures for enclosed buildings.

g. Table pressures may be interpolated using ASCE 7 methodology.

h. For allowable stress design (ASD) pressures shall be permitted to be multiplied by 0.6.

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Proposed Modification to the Florida Building Code

Modification #:

Name: Joseph D. Belcher
Address: 41 Oak Village Boulevard Homosassa, 34446
E-mail: Joe@JDBCodeservices.com
Phone: 352-450-2631
Fax: 813-925-4152
Code: Florida Building Code - Building
Section #: 2002.4

Text of Modification [additions underlined; deletions ~~stricken~~]:

Table 2002.4
DESIGN WIND PRESSURES SCREENED ENCLOSURES [a, b, f, g, h]
(STRENGTH DESIGN OR LRFD ONLY)

_	ULTIMATE DESIGN WIND SPEED V_{ult} (mph)																				
	110			120			130			140			150			160			170		
Surface	Design Pressures by Exposure Category (psf)																				
	B	C	D	B	C	D	B	C	D	B	C	D	B	C	D	B	C	D	B	C	D
Horizontal Pressures on Windward Surfaces [d]	17	24	28	20	28	33	23	32	38	27	38	44	31	43	51	36	49	58	40	56	66
Horizontal Pressures on Leeward Surfaces [d]	13	18	21	15	22	26	20	26	31	21	29	34	22	34	40	25	39	46	29	44	52
Vertical Pressures on Screen Surfaces [c]	4	7	8	6	8	9	6	9	11	8	11	12	9	12	14	10	14	16	11	15	18
Vertical Pressures on Solid Surfaces [e]	14	19	23	17	23	27	20	27	32	23	32	37	25	36	42	29	41	48	33	46	54

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5905_Text_Mod__Table_2002.4_Scn_Enc_Wind_Design_Loads_1.png

For SI: 1 pound per square foot = 9.479 kN/m2.

NOTES:

a. Pressures apply to enclosures with a mean enclosure roof height of 30 feet (10 m). For other heights, multiply the pressures in this table by the factors in Table 2002.4A.

b. Apply horizontal pressures to the area of the enclosure projected on a vertical plane normal to the assumed wind direction, simultaneously inward on the windward side and outward on the leeward side.

c. Apply vertical pressures upward or downward to the area of the enclosure projected on a horizontal plane.

d. Apply horizontal pressures simultaneously with vertical pressures.

e. Table pressures are MWFRS Loads. The design of solid roof panels and their attachments shall be based on component and cladding loads for enclosed or partially enclosed structures as appropriate.

f. Table pressures apply to 20 × 20 × 0.013" mesh screen. For 18 ×14 × 0.013" mesh screen, pressures on screen surfaces may be multiplied by 0.88. For screen densities greater than 20 × 20 × 0.013", use pressures for enclosed buildings.

g. Table pressures may be interpolated using ASCE 7 methodology.

h. For allowable stress design (ASD) pressures shall be permitted to be multiplied by 0.6.

Fiscal Impact Statement [Provide documentation of the costs and benefits of the proposed modifications to the code for each of the following entities. Cost data should be accompanied by a list of assumptions and supporting documentation. Explain expected benefits.]:

A. Impact to local entity relative to enforcement of code: The change will have no impact on the cost of compliance relative to the enforcement of the code since the provisions have been in effect since the 2001 FBC.

B. Impact to building and property owners relative to cost of compliance with code: No impacts since the provisions have been in effect since the 2001 FBC.

C. Impact to industry relative to cost of compliance with code: No impacts since the provisions have been in effect since the 2001 FBC.

D. Impact to small business: No impacts since the provisions have been in effect since the 2001 FBC.

Rationale [Provide an explanation of why you would like this Proposed Modification to the Florida Building Code.]: The base code does not address this unique structure so commonly found in Florida. The State of Florida has been referred to as the birthplace of the screen enclosure as we know it. The industry began in Florida and is slowly spreading to other states with temperate climates. The provisions have been rejected by the ICC building code change committee in the past.

The proposal brings forward provisions approved in the FBCB 2001. The base code does not address screen enclosures which are very common construction in Florida. The change incorporates requirements for the design of screen enclosures based on an engineering analysis of wind tunnel testing. The work was commissioned by the Aluminum Association of Florida and conducted at the Clemson and Virginia Tech wind tunnels by Dr. Timothy Reinhold, PE, PhD, and Charley Everly, PE.

Please explain how the proposed modification meets the following requirements:

1. Has a reasonable and substantial connection with the health, safety, and

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5905_Text_Mod__Table_2002.4_Scn_Enc_Wind_Design_Loads_2.png

welfare of the general public: The proposal has a reasonable and substantial connection with the welfare of the general public by providing design criteria for a very popular type construction in Florida.

2. **Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction: The proposal strengthens and improves the code by providing design criteria for a very common type construction in Florida.**

3. **Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities: The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.**

4. **Does not degrade the effectiveness of the code: The proposal increases the effectiveness of the code by providing design criteria for a very common type construction in Florida.**

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5905_Text_Mod__Table_2002.4_Scn_Enc_Wind_Design_Loads_3.png

The base code definition does not address screen enclosures adequately and they are a common structure throughout Florida. The provisions are the result of scientific investigation specifically geared toward developing criteria for the construction of wind resistant screen enclosures. The fact that there are so many screen enclosures constructed in Florida and that the entire state is a hurricane prone region merits Florida specific provisions for the design of such structures.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5905_PQ2_ScreenEnc_Struct_Geo_Data_IBC_IRC_1.png

S5905 Prior Code Version question. submitted or attempted to be included

Page: 1

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

The provisions were submitted in the past and rejected in the International Building Code. A number of the provisions have been adopted as an appendix in the International Residential Code Appendix H. The Commission does not adopt appendices.

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Date Submitted	7/30/2012	**Section**	Table 2002.4A	**Proponent**	Joseph Belcher
Chapter	20	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Table 2002.4

Summary of Modification

Brings forward table with height adjustment factors for screen enclosure design.

Rationale

Brings forward the table providing adjustment factors for use with Table 2002.4for enclosures of mean roof heights other than 30 feet. The base code does not address this unique structure so commonly found in Florida. The State of Florida has been referred to as the birthplace of the screen enclosure as we know it. The industry began in Florida and is slowly spreading to other states with temperate climates. The provisions have been rejected by the ICC building code change committee in the past.
The proposal brings forward provisions approved in the FBCB 2001. The base code does not address screen enclosures which are very common construction in Florida. The change incorporates requirements for the design of screen enclosures based on an engineering analysis of wind tunnel testing. The work was commissioned by the Aluminum Association of Florida and conducted at the Clemson and Virginia Tech wind tunnels by Dr. Timothy Reinhold, PE, PhD, and Charley Everly, PE.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The change will have no impact on the cost of compliance relative to the enforcement of the code since the provisions have been in effect since the 2001 FBC.

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

No impacts since the provisions have been in effect since the 2001 FBC.

Impact to industry relative to the cost of compliance with code

No impacts since the provisions have been in effect since the 2001 FBC.

Requirements

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

The proposal has a reasonable and substantial connection with the welfare of the general public by providing design criteria for a very popular type construction in Florida.

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

The proposal strengthens and improves the code by providing design criteria for a very common type construction in Florida.

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

The proposal strengthens and improves the code by providing design criteria for a very common type construction in Florida.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code by providing design criteria for a very common type construction in Florida.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5789 Text Modification

Page: 1

TABLE 2002.4A

HEIGHT ADJUSTMENT FACTORS

MEAN ROOF HEIGHT	EXPOSURE		
	B	C	D
0-15	1	0.86	0.89
20	1	0.92	0.93
25	1	0.96	0.97
30	1	1	1
35	1.05	1.03	1.03
40	1.09	1.06	1.05
45	1.12	1.09	1.07
50	1.16	1.11	1.09
55	1.19	1.14	1.11
60	1.22	1.16	1.13

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5789_TextOfModification_1.png

The base code definition does not address screen enclosures adequately and they are a common structure throughout Florida. The provisions are the result of scientific investigation specifically geared toward developing criteria for the construction of wind resistant screen enclosures. The fact that there are so many screen enclosures constructed in Florida and that the entire state is a hurricane prone region merits Florida specific provisions for the design of such structures.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5789_PQ2_ScreenEnc_Struct_Geo_Data_IBC_IRC_1.png

S5789 Prior Code Version question. submitted or attempted to be included

Page: 1

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

The provisions were submitted in the past and rejected in the International Building Code. A number of the provisions have been adopted as an appendix in the International Residential Code Appendix H. The Commission does not adopt appendices.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5789_PQ3_ScreenEnc_Submitted_IBC_IRC_1.png

Date Submitted	7/6/2012	**Section**	2101.1	**Proponent**	Michael Goolsby
Chapter	21	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section Formatting

Rationale

Legislative mandate resulted in deletion of non-wind related provisions of Chapter 21 HVHZ, making necessary the inclusion of base code elements related to masonry construction materials, masonry construction, quality assurance, and glass unit masonry provisions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Code provisions are now found in the base code, formatting only.

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

None. Code provisions are now found in the base code, formatting only.

Impact to industry relative to the cost of compliance with code

None. Code provisions are now found in the base code, formatting only.

Requirements

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

This modification provides guidance to the applicable section of the base code related to masonry construction materials, masonry construction, quality assurance, and glass unit masonry provisions.

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

This modification provides guidance to the applicable section of the base code related to masonry construction materials, masonry construction, quality assurance, and glass unit masonry provisions.

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

This modification provides guidance to the applicable section of the base code related to masonry construction materials, masonry construction, quality assurance, and glass unit masonry provisions.

Does not degrade the effectiveness of the code

This modification provides guidance to the applicable section of the base code related to masonry construction materials, masonry construction, quality assurance, and glass unit masonry provisions.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4957 Text Modification

2101.1 Scope. This chapter shall govern the materials, design, construction and quality of masonry.

Exception: Buildings and structures located within the high-velocity hurricane zone shall comply with the provisions of Sections 2114, 2103, 2104, 2105, 2110 and Sections 2118~~9~~ through 2122.

Page: 1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_4957_TextOfModification_1.png

Date Submitted	8/1/2012	**Section**	2107.1	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Retains exception to inspection requirements of adopted standard.

Rationale

1. The proposal makes no substantive changes to the current Florida code, but modifies existing section numbers to comply with changes in the reference document.
2. With organized inspections by building departments throughout Florida, there is no need for additional inspections. Florida inspectors are required to be certified in their area and have ongoing continuing education requirements and are competent to perform the required inspections. The proposal permits the architect or engineer to specify the inspections called for in the referenced standard. (TMS 402/ACI 530/ASCE 5, Chapter 1, Section 1.19 and TMS 602/ ACI 530.1/ASCE 6 Section 1.6)

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

If adopted, no fiscal impact relative to local enforcement because it retains and updates existing provisions to account for changes in the reference document and contains no substantive changes. If not adopted, additional inspections by private inspectors required.

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

: If adopted, no fiscal impact to owners relative to code compliance because it retains existing provisions and updates them to account for changes in the reference document and contains no substantive changes. If not adopted, costs of private inspectors will increase costs of compliance.

Impact to industry relative to the cost of compliance with code

No fiscal impact to industry relative to code compliance because it retains existing provisions and updates section number changes in the reference document. If not adopted, costs of private inspectors will increase costs of compliance to some sectors of industry.

Requirements

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

The proposal is connected to public health, safety, and welfare because it updates section references that changed in an existing referenced standard and eliminates duplicate inspections unless specified by the architect or engineer of the project.

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

The proposal strengthens and improves the code because it updates section references that changed in an existing referenced standard and eliminates duplicate inspections unless specified by the architect or engineer of the project.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code because it updates section references that changed in an existing referenced standard and eliminates duplicate inspections unless specified by the architect or engineer of the project.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2107.1 General. The design of masonry structures using ***allowable stress design*** shall comply with Section 2106 and the requirements of Chapters 1 and 2 of TMS 402/ACI 530/ASCE 5 except as modified by Sections 2107.2 through 2107.4.

Exception: Where plan review and inspections are performed by a local building department in accordance with Sections 107 and 110, the provisions of TMS 402/ACI 530/ASCE 5, Chapter 1, Section 1.19 and TMS 602/ ACI 530.1/ASCE 6 Section 1.6 shall not apply unless specified by the architect or engineer.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5974_TextOfModification_1.png

With organized inspections by building departments throughout Florida, there is no need for additional inspections. Florida inspectors are required to be certified in their area and have ongoing continuing education requirements and are competent to perform the required inspections. The cost of additional independent inspections would increase costs across the board. The proposal permits the architect or engineer to specify the inspections called for in the referenced standard. (TMS 402/ACI 530/ASCE 5, Chapter 1, Section 1.19 and TMS 602/ ACI 530.1/ASCE 6 Section 1.6)

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5974_PQ2_Geo_Data_Inpections_1.png

Date Submitted	8/1/2012	**Section**	2107.2	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Clarifies application of MSJC and corrects erroneous reference to a section in MSJC.

Rationale

1. The Masonry Association of Florida Codes and Standards Committee is concerned that the “in lieu of” may be interpreted to mean the provisions of TMS 402 cannot be used. 2. The change to “in addition to” clarifies the intent. The section reference of the base code is incorrect.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity relative to enforcement of code as the change makes a clarification and corrects an erroneous reference in base code. No new requirements created.

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

No impact to owners relative to compliance with the code as the change makes a clarification and corrects an erroneous reference in base code. No new requirements created.

Impact to industry relative to the cost of compliance with code

No impact to industry relative to compliance with the code as the change makes a clarification and corrects an erroneous reference in base code. No new requirements created.

Requirements

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

The modification improves the safety and welfare of the general public by clarifying the provisions of TMS 402 may be used and correcting an erroneous reference to the lap splice requirements if the MSJC (TMS 402).

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

The modification improves the code by clarifying the provisions of TMS 402 may be used and correcting an erroneous reference to the lap splice requirements if the MSJC (TMS 402).

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

The proposed amendment does not discriminate.

Does not degrade the effectiveness of the code

The modification improves the effectiveness of the code by clarifying the provisions of TMS 402 may be used and correcting an erroneous reference to the lap splice requirements if the MSJC (TMS 402).

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5962 Text Modification

2107.2 TMS 402/ACI 530/ASCE 5, Section 2.1.~~8~~ 7 .7.1.1, lap splices. In ~~lieu of~~ addition to Section 2.1.~~8~~. 7.7.1.1, it shall be permitted to design lap splices in accordance with Section 2107.2.1.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5962_TextOfModification_1.png

Date Submitted	8/1/2012	**Section**	2107.4	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Deletes an unnecessary change to the MSJC.

Rationale

Adding the section has no effect on design, is counter to the MSJC, and may result in confusion. The limit is found in the provisions for strength design for masonry and strength design of autoclaved aerated concrete masonry in the MSJC. (TMS 402/ACI 530/ASCE 5 at Sections 3.3.3.1 and 8.3.3.1 respectively) However, here is no corresponding requirement in the allowable stress section of the MSJC because bar stresses do not get high enough to be critical factor making the limit necessary. (TMS 402/ACI 530/ASCE 5, Chapter 2, Allowable Stress Design of Masonry) Further, the restrictive provisions for laps will most likely preclude bars larger No. 8. This is true in both the 2008 and 2011 editions of the MSJC. (TMS 402/ACI 530/ASCE 5 2008 and 2011)

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity relative to enforcement of code as the section has no effect and is counter to TMS 402/ACI 530/ASCE 5.

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

No impact to building and property owners as the section has no effect and is counter to TMS 402/ACI 530/ASCE 5.

Impact to industry relative to the cost of compliance with code

No impact to industry as the section has no effect and is counter to TMS 402/ACI 530/ASCE 5.

Requirements

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

The modification improves the safety and welfare of the general public by removing unnecessary changes to an adopted nationally recognized standard thereby eliminating the potential for confusion and misinterpretation by designers.

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

The modification strengthens and improves the code by removing unnecessary changes to an adopted nationally recognized standard thereby eliminating the potential for confusion and misinterpretation by designers.

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

The proposed amendment does not discriminate.

Does not degrade the effectiveness of the code

The modification improves the effectiveness of the code by removing unnecessary changes to an adopted nationally recognized standard thereby eliminating the potential for confusion and misinterpretation by designers.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

The provisions are unneccessary for Florida and were removed during the adoption of the previous base code as well.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

Adding the section has no effect on design, is counter to the MSJC, and may result in confusion. The limit is found in the provisions for strength design for masonry and strength design of autoclaved aerated concrete masonry in the MSJC. (TMS 402/ACI 530/ASCE 5 at Sections 3.3.3.1 and 8.3.3.1 respectively) However, here is no corresponding requirement in the allowable stress section of the MSJC because bar stresses do not get high enough to be critical factor making the limit necessary. (TMS 402/ACI 530/ASCE 5, Chapter 2, Allowable Stress Design of Masonry) Further, the restrictive provisions for laps will most likely preclude bars larger No. 8. This is true in both the 2008 and 2011 editions of the MSJC. (TMS 402/ACI 530/ASCE 5 2008 and 2011)

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

~~2107.4 TMS 402/ACI 530/ASCE 5, Section 2.3.7, maximum bar size. Add the following to Chapter 2:~~

~~-~~

~~2.3.7 Maximum bar size. The bar diameter shall not exceed one-eighth of the nominal wall thickness and shall not exceed one-quarter of the least dimension of the cell, course or collar joint in which it is placed.~~

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5963_TextOfModification_1.png

Date Submitted	8/1/2012	**Section**	2107.4	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Modify Mod 5963 to show section as reserved, rather than deleted.

Rationale

Adding the section to Chapter 2 of the MSJC has no effect on design, is counter to the MSJC, and may result in confusion. The limit is found in the provisions for strength design for masonry and strength design of autoclaved aerated concrete masonry in the MSJC. (TMS 402/ACI 530/ASCE 5 at Sections 3.3.3.1 and 8.3.3.1 respectively) However, here is no corresponding requirement in the allowable stress section of the MSJC because bar stresses do not get high enough to be critical factor making the limit necessary. (TMS 402/ACI 530/ASCE 5, Chapter 2, Allowable Stress Design of Masonry) Further, the restrictive provisions for laps will most likely preclude bars larger No. 8. This is true in both the 2008 and 2011 editions of the MSJC. (TMS 402/ACI 530/ASCE 5 2008 and 2011)

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity relative to enforcement of code as the section has no effect and is counter to TMS 402/ACI 530/ASCE 5.

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

No impact to building and property owners as the section has no effect and is counter to TMS 402/ACI 530/ASCE 5.

Impact to industry relative to the cost of compliance with code

No impact to industry as the section has no effect and is counter to TMS 402/ACI 530/ASCE 5.

Requirements

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

The modification improves the safety and welfare of the general public by removing unnecessary changes to an adopted nationally recognized standard thereby eliminating the potential for confusion and misinterpretation by designers.

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

2. Strengthens or improves the code, and provides equivalent or better products, methods, by removing unnecessary changes to an adopted nationally recognized standard thereby eliminating the potential for confusion and misinterpretation by designers.

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

The proposed amendment does not discriminate.

Does not degrade the effectiveness of the code

The modification improves the effectiveness of the code by removing unnecessary changes to an adopted nationally recognized standard thereby eliminating the potential for confusion and misinterpretation by designers.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

Adding the section to Chapter 2 of the MSJC has no effect on design, is counter to the MSJC, and may result in confusion. The limit is found in the provisions for strength design for masonry and strength design of autoclaved aerated concrete masonry in the MSJC. (TMS 402/ACI 530/ASCE 5 at Sections 3.3.3.1 and 8.3.3.1 respectively) However, here is no corresponding requirement in the allowable stress section of the MSJC because bar stresses do not get high enough to be critical factor making the limit necessary. (TMS 402/ACI 530/ASCE 5, Chapter 2, Allowable Stress Design of Masonry) Further, the restrictive provisions for laps will most likely preclude bars larger No. 8. This is true in both the 2008 and 2011 editions of the MSJC. (TMS 402/ACI 530/ASCE 5 2008 and 2011)

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2107.4 ***Reserved.*** ~~**TMS 402/ACI 530/ASCE 5, Section 2.3.7, maximum bar size. Add the following to Chapter 2:**~~

~~**2.3.7 Maximum bar size. The bar diameter shall not exceed one-eighth of the nominal wall thickness and shall not exceed one-quarter of the least dimension of the cell, course or collar joint in which it is placed.**~~

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5975_TextOfModification_1.png

Date Submitted	8/2/2012	**Section**	2107.4	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Retains gamma factors for calculating lap length for development of bars in tension and compression.

Rationale

The proposal retains changes initially adopted in the 2001 FBC. For Florida the unmodified provisions have the greatest impact where larger reinforcement bars are required. For example, in many cases a lap length of 8 feet is required where using No. 6 reinforcement bars or greater. Approval of this proposal will result in the providing the designer the option of using the provisions of the nationally recognized consensus standards adopted within the code. (TMS 402/ ACI 530/ASCE 5) or as modified by the code.

The provisions of TMS 402 are intended to address seismic forces by providing a plastic hinge allowing the wall to flex to resist seismic loads and recover. Such joints are not necessary for resisting wind loads where weight and stiffness are beneficial. In fact, the current provisions have been shown to result in considerable over design for resisting seismic loads. The proposal permits the designer to use the lap splice provisions of TMS 402 or the lap splice provisions of TMS 402 as modified by the Florida Building Code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

If adopted, no fiscal impact relative to local enforcement because it retains existing provisions addressing wind resistant construction with no substantive changes. If not adopted, there will be additional costs for material and labor with no proven need.

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

If adopted, no fiscal impact to owners relative to code compliance because it retains existing provisions addressing wind resistant construction with no substantive changes. If not adopted, there will be additional costs for material and labor with no proven need.

Impact to industry relative to the cost of compliance with code

If adopted, no fiscal impact to industry relative to code compliance because it retains existing provisions addressing wind resistant construction with no substantive changes. If not adopted, there will be additional costs for material and labor with no proven need.

Requirements

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

The proposal is connected to public health, safety, and welfare because it retains modifications providing the designer flexibility in the design and by addressing the specific issues of wind resistant construction.

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

The proposal strengthens and improves the code because it retains modifications providing the designer flexibility in the design and by addressing the specific issues of wind resistant construction.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code because it retains modifications providing the designer flexibility in the design and by addressing the specific issues of wind resistant construction.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

OTHER

Explanation of Choice

The industry has been trying to work this out and has submitted changes, however, the seismic community continues to resist any change.

NOTE: New section number based on approval of Mod 5975 deleting current language and reserving section number. If Mod 5975 is not approved, the section number for this Mod would be 2107.5.

2107.4 TMS 402/ACI 530/ASCE 5, Section 2.1.7 .3, Development of bars in tension and compression. Modify Section 2.1.7.3 as follows:

2.1.7.3 The required development length of reinforcing bars shall be determined by Equation (2- 12), but shall not be less than 12 in. (305 mm), but need not be greater than 72 db.

Equation 2-12 from TMS 402/ACI 530/ASCE 5, unchanged. Gamma factors are changed as follows:

y = 1.0 for No. 3 (M#10) through No. 5 (M#16) bars;

y = ~~1.3~~ 1.04 for No. 6 (M#19) through No. 7 (M#22) bars; and

y = ~~1.5~~ 1.2 for No. 8 (M#25) through No. 11 (M#36) bars

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5977_TextOfModification_1.png

S5977 Prior Code Version question. Evidence or Data

Page: 1

When originally developing the revised lap splice design equation for masonry within the MSJC, the driving consideration was to provide increased ductility in regions of higher seismic risk. Inherent in the design equation for masonry lap splices is a ductility, or over strength, factor of 1.25 intended to provide strength well after the lap has undergone inelastic deformation, which is necessary in earthquake design. Florida, conversely, has some of the lowest seismic spectral accelerations in the country and it can therefore be argued that the seismic detailing inherent to the lap splice design equation is unnecessary. As a simple means of removing the 1.25 factor from the lap splice design equation, it is proposed to reduce the bar size factors (gammas) for No. 6 and larger bars by this same factor of 1.25. The bar size factor does not need to be reduced for No. 5 and smaller bars as research as conclusively demonstrated that reinforcing bars of this size can achieve the necessary ductility at relatively shorter lap lengths. Further, reducing the lap splice lengths for No. 5 and smaller bars may result in other types of failure, such as reinforcement pullout from the masonry assembly.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5977_PQ2_Geo_Data_LapSplice_2107.4_1.png

Date Submitted	7/13/2012	**Section**	1609.1.2 Protection of Openings	**Proponent**	Suzanne Davis
Chapter	16	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Revised to add items 3 and 4 and to be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Rationale

Revised to add items 3 and 4 and to be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Currently used under the 2010 Code, no new requirements being established

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

Currently used under the 2010 Code, no new requirements being established

Impact to industry relative to the cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Requirements

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

Does not degrade the effectiveness of the code

Carried over from the previous, field tested and proven to be effective

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

Revised to add items 3 and 4 and to be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

1. Glazed openings located within 30 feet (9.1 m) of grade shall meet the requirements of the Large Missile Test of ASTM E 1996.

2. Glazed openings located more than 30 feet (9.1 m) above grade shall meet the provisions of the Small Missile Test of ASTM E 1996.

3. Storage sheds that are not designed for human habitation and that have a floor area of 720 square feet (67 m2) or less are not required to comply with the mandatory windborne debris impact standards of this code.

4. Openings in sunrooms, balconies or enclosed porches constructed under existing roofs or decks are not required to be protected provided the spaces are separated from the building interior by a wall and all openings in the separating wall are protected in accordance with Section 1609.1.2 4 above. Such spaces shall be permitted to be designed as either partially enclosed or enclosed structures.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5122_TextOfModification_1.png

S5216

Date Submitted	7/17/2012	**Section**	1913	**Proponent**	Suzanne Davis
Chapter	19	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Sections 1913.3.1 and 1913.3.2. To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Rationale

To carry forward declaratory statement in accordance with the Commission Plan to implement the 2013 Code. Also to be consistent with the Florida Statutes.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Currently used under the 2010 Code, no new requirements being established

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

Currently used under the 2010 Code, no new requirements being established

Impact to industry relative to the cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Requirements

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

Does not degrade the effectiveness of the code

Carried over from the previous, field tested and proven to be effective

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

To carry forward declaratory statement in accordance with the Commission Plan to implement the 2013 Code. Also to be consistent with the Florida Statutes.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5216 Text Modification

Page: 1

SECTION 1913

SPECIAL WIND PROVISIONS FOR CONCRETE

1913.1 Reinforced concrete components. The design and construction of reinforced concrete components for buildings sited in areas where the ultimate design wind speed, Vult, is ~~with a basic wind speed~~ greater than 115 ~~100~~ mph **(45 m/s) in accordance with Figure 1609 shall conform to the requirements of ACI 318 or with Section 1609.1.1, Exception 1~~3~~, as applicable, except as modified in this section.**

1913.2 Insulated concrete form wall. Insulated concrete form (ICF) wall construction for buildings shall be in accordance with ACI 318 or with Section 1609.1.1, Exception 1~~2~~, as applicable.

1913.3 Gable endwalls.

1913.3.1 General. Gable endwalls shall be structurally continuous between points of lateral support.

1913.3.2 Cathedral endwalls. Gable endwalls adjacent to cathedral ceilings shall be structurally continuous from the uppermost floor to ceiling diaphragm or to the roof diaphragm.

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Structural

Proposed Code Modifications

2013 Florida Building Code - Full Report

This document created by the Florida Department of Business and Professional Regulation - 850-487-1824

TAC: Structural

Sub Code: Building

Total Mods for Structural: 85

Date Submitted	8/2/2012	**Section**	2107.5	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Reinstates provision within MSJC dealing with lateral ties in pilasters.

Rationale

The proposal reinstates longstanding provisions of the MSJC (TMS 402/ ACI 530/ASCE 5). The change to the MSJC eliminating the text of the proposed Section 1.15.1 is based on addressing seismic loads. For Florida, a seismically inactive state, the provisions add cost for no proven need.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

If adopted, no fiscal impact relative to local enforcement because it retains provisions in the formerly adopted standard addressing wind resistant construction with no substantive changes. If not adopted, there will be additional costs for material and labor with no proven need.

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

If adopted, no fiscal impact to owners relative to code compliance because it retains provisions in the formerly adopted standard addressing wind resistant construction with no substantive changes. If not adopted, there will be additional costs for material and labor with no proven need.

Impact to industry relative to the cost of compliance with code

If adopted, no fiscal impact to industry relative to code compliance because it retains provisions in the formerly adopted standard addressing wind resistant construction with no substantive changes. If not adopted, there will be additional costs for material and labor with no proven need.

Requirements

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

The proposal is connected to public health, safety, and welfare because it modifies a reference standard to continue to address the specific issues of wind resistant construction.

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

The proposal strengthens and improves the code because it modifies a reference standard to continue to address the specific issues of wind resistant construction.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code because it modifies a reference standard to continue to address the specific issues of wind resistant construction.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2107.5 TMS 402/ACI 530/ASCE 5, Section 1.15 Pilasters. Modify Section 1.15 as follows:

1.15.1 Where vertical reinforcement is provided to resist axial compressive stress, lateral ties shall meet all applicable requirements of Section 1.14.1.4.

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Date Submitted	8/2/2012	**Section**	2107.5	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Revision of Mod 5979 to remove Section of TMS 402/ACI 530/ASCE 5, Section 1.15 from Mod as the Section is unchanged and was included solely for reference, not direct inclusion in the code.

Rationale

The proposal reinstates longstanding provisions of the MSJC (TMS 402/ ACI 530/ASCE 5). Elimination of the provision from the MSJC means more lateral ties will be required in pilasters. The change to the MSJC eliminating the text of the proposed Section 1.15.1 (Formerly Section 2.1.7.2 of MSJC) is based on addressing seismic loads. For Florida, essentially a seismically inactive state, the provisions add material and labor costs for no proven need.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

If adopted, no fiscal impact relative to local enforcement because it retains provisions in the formerly adopted standard addressing wind resistant construction with no substantive changes. If not adopted, there will be additional costs for material and labor with no proven need.

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

If adopted, no fiscal impact to owners relative to code compliance because it retains provisions in the formerly adopted standard addressing wind resistant construction with no substantive changes. If not adopted, there will be additional costs for material and labor with no proven need.

Impact to industry relative to the cost of compliance with code

If adopted, no fiscal impact to industry relative to code compliance because it retains provisions in the formerly adopted standard addressing wind resistant construction with no substantive changes. If not adopted, there will be additional costs for material and labor with no proven need.

Requirements

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

The proposal is connected to public health, safety, and welfare because it modifies a reference standard to continue to address the specific issues of wind resistant construction.

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

The proposal strengthens and improves the code because it modifies a reference standard to continue to address the specific issues of wind resistant construction.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code because it modifies a reference standard to continue to address the specific issues of wind resistant construction.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5987 Text Modification

2107.5 TMS 402/ACI 530/ASCE 5, Section 1.15 Pilasters. Modify Section 1.15 as follows:

1.15.1 Where vertical reinforcement is provided to resist axial compressive stress, lateral ties shall meet all applicable requirements of Section 1.14.1.4.

Page: 1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5987_TextOfModification_1.png

Date Submitted	8/1/2012	**Section**	2108.1	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Retains exception to inspection requirements of adopted standard.

Rationale

1. The proposal makes no substantive changes to the current Florida code, but modifies existing section numbers to comply with changes in the reference document.
2. With organized inspections by building departments throughout Florida, there is no need for additional inspections. Florida inspectors are required to be certified in their area and have ongoing continuing education requirements and are competent to perform the required inspections. The proposal permits the architect or engineer to specify the inspections called for in the referenced standard. (TMS 402/ACI 530/ASCE 5, Chapter 1, Section 1.19 and TMS 602/ ACI 530.1/ASCE 6 Section 1.6)

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

If adopted, no fiscal impact relative to local enforcement because it retains and updates existing provisions to account for changes in the reference document and contains no substantive changes. If not adopted, additional inspections by private inspectors required.

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

: If adopted, no fiscal impact to owners relative to code compliance because it retains existing provisions and updates them to account for changes in the reference document and contains no substantive changes. If not adopted, costs of private inspectors will increase costs of compliance.

Impact to industry relative to the cost of compliance with code

No fiscal impact to industry relative to code compliance because it retains existing provisions and updates section number changes in the reference document. If not adopted, costs of private inspectors will increase costs of compliance to some sectors of industry.

Requirements

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

The proposal is connected to public health, safety, and welfare because it updates section references that changed in an existing referenced standard and eliminates duplicate inspections unless specified by the architect or engineer of the project.

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

The proposal strengthens and improves the code because it updates section references that changed in an existing referenced standard and eliminates duplicate inspections unless specified by the architect or engineer of the project.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code because it updates section references that changed in an existing referenced standard and eliminates duplicate inspections unless specified by the architect or engineer of the project.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5973 Text Modification

2108.1 General. The design of masonry structures using strength design shall comply with Section 2106 and the requirements of Chapters 1 and 3 of TMS 402/ACI 530/ASCE, except as modified by Section 2108.2 through 2108.3.

Exceptions:

1. AAC masonry shall comply with the requirements of Chapters 1 and 8 of TMS 402/ACI 530/ASCE 5.

2. Where plan review and inspections are performed by a local building department in accordance with Sections 107 and 110, the provisions of TMS 402/ACI 530/ASCE 5, Chapter 1, Section 1.19 and TMS 602/ ACI 530.1/ASCE 6 Section 1.6 shall not apply unless specified by the architect or engineer.

Page: 1

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With organized inspections by building departments throughout Florida, there is no need for additional inspections. Florida inspectors are required to be certified in their area and have ongoing continuing education requirements and are competent to perform the required inspections. The cost of additional independent inspections would increase costs across the board. The proposal permits the architect or engineer to specify the inspections called for in the referenced standard. (TMS 402/ACI 530/ASCE 5, Chapter 1, Section 1.19 and TMS 602/ ACI 530.1/ASCE 6 Section 1.6)

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5973_PQ2_Geo_Data_Inpections_1.png

Date Submitted	8/2/2012	**Section**	2108.4	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	No	**Attachments**	Yes

General Comments No

Alternate Language No

Related Modifications

None

Summary of Modification

Retains gamma factors for determining development length of reinforcement for strength design.

Rationale

The proposal retains changes initially adopted in the 2001 FBC. For Florida the unmodified provisions have the greatest impact where larger reinforcement bars are required. For example, in many cases a lap length of 8 feet is required where using No. 6 reinforcement bars or greater. Approval of this proposal will result in the providing the designer the option of using the provisions of the nationally recognized consensus standards adopted within the code. (TMS 402/ ACI 530/ASCE 5) or as modified by the code.

The provisions of TMS 402 are intended to address seismic forces by providing a plastic hinge allowing the wall to flex to resist seismic loads and recover. Such joints are not necessary for resisting wind loads where weight and stiffness are beneficial. In fact, the current provisions have been shown to result in considerable overdesign for resisting seismic loads. The proposal permits the designer to use the lap splice provisions of TMS 402 or the lap splice provisions of TMS 402 as modified by the Florida Building Code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

If adopted, no fiscal impact relative to local enforcement because it retains existing provisions addressing wind resistant construction with no substantive changes. If not adopted, there will be additional costs for material and labor with no proven need.

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

If adopted, no fiscal impact to owners relative to code compliance because it retains existing provisions addressing wind resistant construction with no substantive changes. If not adopted, there will be additional costs for material and labor with no proven need.

Impact to industry relative to the cost of compliance with code

If adopted, no fiscal impact to industry relative to code compliance because it retains existing provisions addressing wind resistant construction with no substantive changes. If not adopted, there will be additional costs for material and labor with no proven need.

Requirements

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

The proposal is connected to public health, safety, and welfare because it retains modifications providing the designer flexibility in the design and by addressing the specific issues of wind resistant construction.

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

The proposal strengthens and improves the code because it retains modifications providing the designer flexibility in the design and by addressing the specific issues of wind resistant construction.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code because it retains modifications providing the designer flexibility in the design and by addressing the specific issues of wind resistant construction.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

OTHER

Explanation of Choice

The industry has been trying to work with out, but the seismic community has not agreed to accept modifications to the standard reflecting wind design in the required lap lengths.

S5980 Text Modification

Page: 1

2108.4 TMS 402/ACI 530/ASCE 5, Section 2.1.7.3, Development of bars in tension and compression. Modify Section 2.1.7.3 as follows:

2.1.7.3 The required development length of reinforcing bars shall be determined by Equation (2- 12), but shall not be less than 12 in. (305 mm),

but need not be greater than 72 db.

Equation 2-12 from TMS 402/ACI 530/ASCE 5, unchanged. Gamma factors are changed as follows:

y = 1.0 for No. 3 (M#10) through No. 5 (M#16) bars;

y = ~~1.3~~ 1.04 for No. 6 (M#19) through No. 7 (M#22) bars; and

y = ~~1.5~~ 1.2 for No. 8 (M#25) through No. 11 (M#36) bars

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5980_TextOfModification_1.png

S5980 Prior Code Version question. Evidence or Data

Page: 1

When originally developing the revised lap splice design equation for masonry within the MSJC, the driving consideration was to provide increased ductility in regions of higher seismic risk. Inherent in the design equation for masonry lap splices is a ductility, or over strength, factor of 1.25 intended to provide strength well after the lap has undergone inelastic deformation, which is necessary in earthquake design. Florida, conversely, has some of the lowest seismic spectral accelerations in the country and it can therefore be argued that the seismic detailing inherent to the lap splice design equation is unnecessary. As a simple means of removing the 1.25 factor from the lap splice design equation, it is proposed to reduce the bar size factors (gammas) for No. 6 and larger bars by this same factor of 1.25. The bar size factor does not need to be reduced for No. 5 and smaller bars as research as conclusively demonstrated that reinforcing bars of this size can achieve the necessary ductility at relatively shorter lap lengths. Further, reducing the lap splice lengths for No. 5 and smaller bars may result in other types of failure, such as reinforcement pullout from the masonry assembly.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5980_PQ2_Geo_Data_LapSplice_2107.4_1.png

Date Submitted	7/25/2012	**Section**	2109.1.1	**Proponent**	T Stafford
Chapter	21	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

This proposal reinstates the limit on using empirical design of masonry to areas where the Vult wind speed equals or exceeds 115 mph.

Rationale

This language is currently contained in the 2010 FBC. No new requirements are being proposed. This proposal reinstates the threshold for constructing masonry buildings using empirical design that is contained in the 2010 FBCB. By setting the limit at Vult of 115 mph, this ensures that all masonry buildngs in the State of Florida are either designed for the appropriate wind loads, or are built to one of the prescriptive standards for high wind regions such as ICC 600. History has proven that in hurricane prone regions such as Florida, unreinforced buildings without special consideration of load path issues perform very poorly when subjected to hurricanes. This proposal maintains the limit established for the 2010 FBCB and essentially carries for the limit that has been established for the State of Florida since the inception of the Florida Building Codes.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2109.1.1 Limitations.
The use of empirical design of masonry shall be limited as noted in Section 5.1.2 of TMS 402/ACI 530/ASCE 5. The use of dry-stacked, surface-bonded masonry shall be prohibited in ***Risk Category*** IV structures. In buildings that exceed one or more of the limitations of Section 5.1.2 of TMS 402/ACI 530/ASCE 5, masonry shall be designed in accordance with the engineered design provisions of Section 2101.2.1, 2101.2.2 or 2101.2.3 or the foundation wall provisions of Section 1807.1.5.

Section 5.1.2.2 of TMS 402/ACI 530/ASCE 5 shall be modified as follows:

5.1.2.2 Wind – Empirical requirements shall not apply to the design or construction of masonry for buildings, parts of buildings, or other structures to be located in areas where Vult ~~Vasd~~ as determined in accordance with Figures 1609A, 1609B, or 1609C ~~Section 1609.3.1~~ of the Florida Building Code, Building ~~International Building Code~~ exceeds 115 ~~110~~ mph.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5649_TextOfModification_1.png

Date Submitted	7/24/2012	**Section**	2114	**Proponent**	T Stafford
Chapter	21	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Reinstates requirements that gable endwalls be structurally continuous between points of lateral support. This language currently exists in the 2010 FBCB.

Rationale

This language is currently contained in the 2010 FBC. No new requirements are being proposed. This proposal reinstates provisions for concrete gable end walls. Section 2114 specifically addresses gable end walls. This language has actually existed in the Florida Building Code since the first edition (2001). During the development of the 2001 FBC, a newspage article highlighted some deficiencies throughout the state with regard to the design of gable end walls. The Structural TAC crafted this language to address these deficiencies. The language clarifies that if the gable end wall is not structural continuous from the floor to the roof, bracing of the discontinuity is required.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5620 Text Modification

Page: 1

SECTION 2114

Special Wind Provisions for Masonry.

2114.1 Gable endwalls.

2114.1.1 General. Gable endwalls shall be structurally continuous between points of lateral support.

2114.1.2 Cathedral endwalls. Gable endwalls adjacent to cathedral ceilings shall be structurally continuous from the uppermost floor to the ceiling diaphragm or to the roof diaphragm.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5620_TextOfModification_1.png

Date Submitted	8/2/2012	**Section**	2122.1	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Upate section of standard cited.

Rationale

The section number changed in TMS 402-11

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact, modification updates section cited.

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

No impact, modification updates section cited.

Impact to industry relative to the cost of compliance with code

No impact, modification updates section cited.

Requirements

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

The proposal is connected to public health, safety, and welfare because it updates the section cited.

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

The proposal improves the code because it updates the section cited.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal is improves the effectiveness of the code because it updates the section cited.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

HVHZ provision.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

HVHZ provision.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

OTHER

Explanation of Choice

HVHZ provision.

2122.1 Standards. The provisions of TMS 402/ACI 530/ASCE 5 and TMS 602/ACI 530.1/ASCE 6 are hereby adopted as a minimum for the design and construction of reinforced unit masonry. In addition to TMS 402/ ACI 530/ ASCE 5 and TMS 602/ACI 530.1/ASCE 6, reinforced unit masonry structures shall comply with Sections 2122.2.

Exception: Unless otherwise specified by the designing architect or engineer, where plan review and inspections are performed by a local building department in accordance with Sections 107 and 110, the provisions of TMS 402/ ACI 530/ASCE 5/TMS 402, Chapter 1, Section 1.~~18~~ 19 and TMS 602/ ACI 530.1/ASCE 6/ Sections 1.5 and 1.6 shall not apply.

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S5981

Date Submitted	8/2/2012	**Section**	2122.2.1	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Clarification of intent of section.

Rationale

The provisions of Section 2121 are a prescriptive method and have no application to designs complying with TMA 402/ACI 530/ASCE5. The Section was unclear and the modification is to clarify the intent.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact, modification clarifies intent.

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

: No impact, modification clarifies intent.

Impact to industry relative to the cost of compliance with code

No impact, modification clarifies intent.

Requirements

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

The proposal is connected to public health, safety, and welfare because it clarifies the intent of the section.

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

The proposal improves the code because it clarifies the intent of the section.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectivness of the code because it clarifies the intent of the section.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

HVHZ provision.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

HVHZ Provision

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5981 Text Modification

2122.2.1 ~~Tie columns and tie beams as set forth in~~ Section 2121 shall be not ~~required~~ apply where design and construction are in accordance with the provisions of this section.

Page: 1

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Date Submitted	8/2/2012	**Section**	2122.2.3	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Updates Section citation.

Rationale

Updates Section citation to agree with TMS 602/ACI530.1/ASCE 6-2011.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. Updates section citation.

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

No impact. Updates section citation.

Impact to industry relative to the cost of compliance with code

No impact. Updates section citation.

Requirements

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

The proposal is connected to public health, safety, and welfare because updates a section citation.

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

The proposal improves the code because updates a Section citation.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal improves the effectiveness of the code because it updates a Section citation.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

HVHZ provision.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

HVHZ provision.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

OTHER

Explanation of Choice

HVHZ provision.

2122.2.3 Minimum No. 9 gauge ladder type horizontal joint reinforcing at every alternate course (16-inch (406 mm) spacing), for reinforced masonry shall be provided. This reinforcement shall be tied to structural columns with approved methods. In addition, horizontal joint reinforcement shall comply with TMS 602/ACI530.1/ASCE 6 Sections 2.4C thru 2.4F and Section 3.4B.~~7~~ 10.

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Date Submitted	8/2/2012	**Section**	2122.4	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Modifies reinforcement details.

Rationale

Unecessary duplication of identical provisions at 2107.7 and 2107.8. The horizontal joint reinforcement is addressed at 2122.2.3

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. Items covered elsewhere in code.

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

No impact. Items covered elsewhere in code.

Impact to industry relative to the cost of compliance with code

No impact. Items covered elsewhere in code.

Requirements

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

Eliminates unnecessary duplication.

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

Eliminates unnecessary duplication.

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

Eliminates unnecessary duplication.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

HVHZ provision.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

HVHZ provision.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

OTHER

Explanation of Choice

HVHZ provision.

S5983 Text Modification

2122.4 Reinforcement. Reinforcement shall comply with TMS 402/ACI 530/ ASCE 5 and TMS 602/ ACI 530.1/ ASCE 6 except as modified ~~herein~~ Sections 2107 and 2108.

~~**2122.4.1** Development of bars in tension and compression shall be in accordance with TMS 402/ASCE 530/ ASCE5 Section 2.1.9.3 with the following changes to the factor y of Equation 2-12~~

~~? = 1.0 for No. 3 (M#10) through No. 5 (M#16) bars;~~

~~? = 1.04 for No. 6 (M#19) through No. 7 (M#22) bars; and~~

~~? = 1.2 for No. 8 (M#25) through No. 11 (M#36) bars~~

~~-~~

~~Where epoxy-coated bars are used, lap length shall be increased by 50 percent.~~

~~**2122.4.2** Splices of reinforcement shall be in accordance with TMS 402/ ACI 530/ ASCE 5. Lap splices, welded splices, or mechanical splices are permitted in accordance with the provisions of TMS 402/ ACI 530/ ASCE 5 Section 2.1.9.7. Welding shall conform to AWS D1.4.~~

2122.4.~~3~~ 1 ~~Lap splices shall be in accordance with TMS 402/ ACI 530/ ASCE 5, Section 2.1.9.7.1.1 with the modifications of Section 2122.4.1 to the factor y of Equation 2-12.~~ In no case shall the length of the lapped splice be less than 48 bar diameters, but not less than 12 inches.

~~**2122.4.4 Joint reinforcement**. Horizontal joint reinforcement shall be provided at every other course. Joint reinforcement shall be a minimum of No. 9 gauge and shall comply with TMS 602/ACI 530.1/ ASCE 6 Sections 2.4C through 2.4F. Joint reinforcement shall be placed in accordance with TMS 602/ACI 530.1/ ASCE 6 Section 3.4 B.7.~~

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Date Submitted	8/2/2012	**Section**	2122.5	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Modifies provisions related to concentrated loads.

Rationale

The code at Section 2122.1 require compliance with TMS 402/ACI 530/ASCE 5 and TMS 602/ACI 530.1/ASCE 6 (MSJC) The MSJC adequately addresses the distribution of concentrated loads. TMS 402-2011 was modified to add detailed diagrams depicting these conditions to the Commentary. We believe using the MSJC will result in less confusion for designers and enforcement.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. The modification to delete the provisions is based on the requirements being adequately and more clearly addressed in TMS 402/ ACI 530/ ASCE 5 and the addition of detailed diagrams of the conditions in the Commentary to TMS 402/ ACI 530/ ASCE 5.

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

No impact. The modification to delete the provisions is based on the requirements being adequately and more clearly addressed in TMS 402/ ACI 530/ ASCE 5 and the addition of detailed diagrams of the conditions in the Commentary to TMS 402/ ACI 530/ ASCE 5.

Impact to industry relative to the cost of compliance with code

No impact. The modification to delete the provisions is based on the requirements being adequately and more clearly addressed in TMS 402/ ACI 530/ ASCE 5 and the addition of detailed diagrams of the conditions in the Commentary to TMS 402/ ACI 530/ ASCE 5.

Requirements

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

The proposal is connected to public health, safety, and welfare because it clarifies the requirements for the distribution of concentrated loads.

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

The proposal improves the code because it clarifies the requirements for the distribution of concentrated loads.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal improves the effectiveness of the code because it clarifies the requirements for the distribution of concentrated loads.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

HVHZ provision.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

HVHZ provision.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

OTHER

Explanation of Choice

HVHZ provision.

S5990 Text Modification

2122.5. Concentrated loads. Concentrated loads shall be in accordance with TMS 402/ ACI 530/ ASCE 5 Sections 1.9.7~~.2~~ and 1.9.5.~~ and shall not be assumed distributed across continuous vertical joints, including stack bond joints, unless reinforcing elements are designed and provided to distribute such loads.~~

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Date Submitted	8/2/2012	**Section**	2122.8.2	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Clarification and update of cited section number.

Rationale

The modification clarifies the requirements related to the alignment of vertical cells to receive grout and updates a cited section of a referenced standard.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. The modification clarifies the language related to vertical alignment of cells to receive grout and updates a cited section in a referenced standard, TMS 402/ ACI 530/ ASCE 5.

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

No impact. The modification clarifies the language related to vertical alignment of cells to receive grout and updates a cited section in a referenced standard, TMS 402/ ACI 530/ ASCE 5.

Impact to industry relative to the cost of compliance with code

No impact. The modification clarifies the language related to vertical alignment of cells to receive grout and updates a cited section in a referenced standard, TMS 402/ ACI 530/ ASCE 5.

Requirements

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

The proposal is connected to public health, safety, and welfare because it clarifies the requirements related to the alignment of vertical cells to receive grout and updates a cited section of a referenced standard.

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

The proposal improves the code because it clarifies the requirements related to the alignment of vertical cells to receive grout and updates a cited section of a referenced standard.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal improves the efffectiveness of the code because it clarifies the requirements related to the alignment of vertical cells to receive grout and updates a cited section of a referenced standard.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

HVHZ Provision.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

HVHZ Provision.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

OTHER

Explanation of Choice

HVHZ Provision.

2122.8.2 Vertical alignment of vertical cells to be grouted shall ~~provided~~ be sufficient to maintain clear, unobstructed, continuous, vertical cores measuring not less than 2 ½ inches by 3 inches (51 mm by 76 mm) for fine aggregate grout and 3 inches by 3 inches for coarse aggregate grout as defined by ASTM C 476. The architect or engineer may specify other grout space sizes which shall be permitted provided they comply with TMS 402/ ACI 530/ ASCE 5 Section 1.~~19~~ 20 and TMS 602/ ACI 530.1/ ASCE 6 Section 3.5C.

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Date Submitted	8/2/2012	**Section**	2122.8.8	**Proponent**	Joseph Belcher
Chapter	21	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Clarification and and adoption of TMS 602/ ACI 530.1/ ASCE 6 Section 3.5.

Rationale

Grout pour heights are based on several factors including the grout type. The MSJC in the worst case scenario limits grout lifts to 5 feet 4 inches. The limit in the existing language limiting grout lifts to “4 5 feet” is unclear and confusing. It is unclear if the intent of the existing language is to adopt the 5 feet 4 inches limit of the MSJC and the numbers were transposed, or if this is intended to be a different limit altogether. At any rate, adopting the full provisions of TMS 602/ACI 530.1/ASCE 6 provides a much more comprehensive treatment of this important subject. Designers will be provided flexibility to adopt the best method for the particular project.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. The modification clarifies the language related to grout placement and specifies grout pours and lifts in accordance with TMS 602/ACI 530.1/ASCE 6.

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

The modification clarifies the language related to grout placement and specifies grout pours and lifts in accordance with TMS 602/ACI 530.1/ASCE 6

Impact to industry relative to the cost of compliance with code

No impact. The modification clarifies the language related to grout placement and specifies grout pours and lifts in accordance with TMS 602/ACI 530.1/ASCE 6.

Requirements

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

The proposal is connected to public health, safety, and welfare because it clarifies the requirements related to grout placement and specifies grout pours and lifts in accordance with the comprehensive provisions of TMS 602/ACI 530.1/ASCE 6 increasing the flexibility of design parameters.

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

The proposal improves the code because it clarifies the requirements related to grout placement and specifies grout pours and lifts in accordance with the comprehensive provisions of TMS 602/ACI 530.1/ASCE 6 increasing the flexibility of design parameters.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal improves the effectiveness of the code because it clarifies the requirements related to grout pours and lifts in accordance with the comprehensive provisions of TMS 602/ACI 530.1/ASCE 6 increasing the flexibility of design parameters.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

HVHZ provision.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

HVHZ provision.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

OTHER

Explanation of Choice

HVHZ provision.

2122.8.8 Grout placement shall comply with Section 3.5 of TMS 602/ ACI 530.1/ ASCE 6. Grouting shall be a continuous operation with grout pour height in accordance with Section 3.5C of TMS 602/ ACI 530.1/ ASCE 6 and with grout lift height in accordance with Section 3.5D ofTMS 602/ ACI 530.1/ ASCE 6. ~~in lifts not exceeding 4 5 feet (1.5 m) and a maximum pour of 12 feet 8 inches (3.8 m)~~. ~~Grout placement shall comply with TMS 602/ ACI 530.1/ ASCE 6.~~

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S4947

Date Submitted	7/5/2012	**Section**	2201.1	**Proponent**	Michael Goolsby
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	Yes				
Alternate Language	Yes				

Related Modifications

Summary of Modification

Section Formatting

Rationale

Legislative mandate resulted in deletion of non-wind related provisions of Chapter 22 HVHZ, making necessary the inclusion of base code elements related to steel connections, structural steel, steel joists, steel cable structures and steel storage rack provisions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Code provisions are now found in the base code, formatting only.

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

None. Code provisions are now found in the base code, formatting only.

Impact to industry relative to the cost of compliance with code

None. Code provisions are now found in the base code, formatting only.

Requirements

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

This modification provides guidance to the applicable section of the base code related to steel connections, structural steel, steel joists, steel cable structures and steel storage rack provisions.

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

This modification provides guidance to the applicable section of the base code related to steel connections, structural steel, steel joists, steel cable structures and steel storage rack provisions.

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

This modification provides guidance to the applicable section of the base code related to steel connections, structural steel, steel joists, steel cable structures and steel storage rack provisions.

Does not degrade the effectiveness of the code

This modification provides guidance to the applicable section of the base code related to steel connections, structural steel, steel joists, steel cable structures and steel storage rack provisions.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4947-A4

Proponent Jaime Gascon **Submitted** 9/21/2012 **Attachments** Yes Gascon

Text of Modification

Exception: Buildings and structures located within the high-velocity hurricane zone shall comply with the provision of Sections 2204 through 2208, 2210 and 2214 through 2224.

Rationale

This alternative adds section 2210 of the base code to the HVHZ. It also established the applicable sections in ranges.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Same as in original MOD.

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

Same as in original MOD.

Impact to industry relative to the cost of compliance with code

Same as in original MOD.

Requirements

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

Same as in original MOD.

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

Same as in original MOD.

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

Same as in original MOD.

Does not degrade the effectiveness of the code

Same as in original MOD.

General Comment - 08/09/2012 - 09/23/2012

S4947-G1

Proponent Bonnie Manley **Submitted** 8/9/2012 **Attachments** No

Comment:

Proponent is not clear as to why other applicable sections of Chapter 22 are not referenced. Rather than creating a laundry list that will require future maintenance, I recommend that the committee consider the change recommended in Mod#5319.

S4947 Text Modification

2201.1 Scope. The provisions of this chapter govern the quality, design, fabrication and erection of steel used structurally in buildings or structures.

Exception: Buildings and structures located within the high-velocity hurricane zone shall comply with the provision of Sections 2204, 2205, 2206, 2207, 2208 and 2214 through 2224.

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Exception: Buildings and structures located within the high-velocity hurricane zone shall comply with the provision of Sections 2204 through 2208, 2210 and 2214 through 2224.

S4947 -A4 Text Modification
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Date Submitted	7/24/2012	**Section**	2201.1	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

This proposal, submitted on behalf of the steel industry, clarifies the relationship between the HVHZ provisions and the model base code.

Rationale

As currently written, it is not clear that the requirements in Sections 2214 through 2224 are in addition to the requriements found in the base chapter. The recommend change clarifies the relationship between the HVHZ provisions and the base code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2201.1 Scope. The provisions of this chapter govern the quality, design, fabrication and erection of steel used structurally in buildings or structures.

Exception: Buildings and structures located within the high-velocity hurricane zone shall comply with the additional provisions of 2214 through 2224.

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S4948

Date Submitted	7/5/2012	**Section**	2204.1	**Proponent**	Michael Goolsby
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section Formatting

Rationale

Legislative mandate resulted in deletion of non-wind related provisions of Chapter 22 HVHZ. Where adopted base code Chapter 22 sections give guidance to non-HVHZ Chapter 22 sections, those sections must be modified to also contain guidance to the equivalent HVHZ.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Code provisions are now found in the base code, formatting only.

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

None. Code provisions are now found in the base code, formatting only.

Impact to industry relative to the cost of compliance with code

None. Code provisions are now found in the base code, formatting only.

Requirements

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

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

Provides necessary direction to applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary direction to applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4948 Text Modification

2204.1 Welding. The details of design, workmanship and technique for welding, inspection of welding and qualification of welding operators shall conform to the requirements of the specifications listed in Sections 2205, 2206, 2207, 2208, 2210 (see Section 2222 for HVHZ) and 2211(see Section 2222 for HVHZ). Special inspection of welding shall be provided where required by Section 1705.

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S4944

Date Submitted	7/5/2012	**Section**	2210	**Proponent**	Thomas Sputo
Chapter	22	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Add Standard for composite steel deck slabs to Section 2210

Rationale

This Standard contains provisions for the design and construction of composite steel deck-slabs of concrete on composite steel deck, and reflects current design and construction industry practices.

The 2012 IBC contains no provisions for the design of composite slabs on steel deck. The previous reference standard that was contained in the 2009 IBC (and 2010 FBC) was deleted from the 2012 IBC. Designers and code officials would be required to rely on Section 104.11 of the Code to use this very common structural system. Adding this Standard to the 2013 FBC would fill this gap.

This Standard was submitted for consideration for the 2015 IBC as Proposal S244-12, and was approved by the IBC Structural Committee at the IBC Code Development Hearing in Dallas TX in May 2012 by a vote of 14-0.

The ANSI/SDI C-2011 Standard is an ANSI American National Standard. This Standard, along with all other Steel Deck Institute (SDI) Standards are available for free download from the SDI website for all parties from www.sdi.org

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No increase. Potential decrease in cost due to being able to determine compliance with a referenced standard, rather than Section 104 (Alternate Methods).

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

No increase. Potential decrease in cost due to being able to determine compliance with a referenced standard, rather than Section 104 (Alternate Methods).

Impact to industry relative to the cost of compliance with code

No increase. Potential decrease in cost due to being able to determine compliance with a referenced standard, rather than Section 104 (Alternate Methods).

Requirements

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

Yes, due to being able to determine compliance with a referenced standard, rather than Section 104 (Alternate Methods).

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

Yes, due to being able to determine compliance with a referenced standard, rather than Section 104 (Alternate Methods).

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

Does not discriminate

Does not degrade the effectiveness of the code

Does not degrade the code

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

Add New Text as follows:

2210.1.1.3 Composite slabs on steel decks. Composite slabs of concrete and steel deck shall be permitted to be designed and constructed in accordance with SDI-C, Standard for Composite Steel Floor Deck-Slabs

Add to Chapter 35 References:

SDI-C-2011 Standard for Composite Steel Floor Deck Slabs

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AMERICAN NATIONAL STANDARDS INSTITUTE/ STEEL DECK INSTITUTE

C - 2011 Standard for

Composite Steel Floor Deck - Slabs

ANSI Accredited Standards Developer

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DISCLAIMER

The Steel Deck Institute has developed the material contained herein. The Institute has made a diligent effort to present accurate, reliable, and useful information on design of composite steel deck-slabs.

The materials set forth herein are for general information only. They are not a substitute for competent professional advice. A registered professional engineer should review application of this information to a specific project. In most jurisdictions, law requires such review. Anyone making use of the information set forth herein does so at their own risk and assumes any and all resulting liability arising therefore.

PREFACE

The Steel Deck Institute developed this Standard to determine the nominal resistance and composite stiffness of composite steel deck-slabs. This Standard is intended for use with cold-formed composite steel deck construction.

ACKNOWLEDGEMENTS

This Standard reflects the state-of-the-art pertaining to composite steel deck-slabs. The Steel Deck Institute acknowledges the valuable contributions of the researchers, designers, and members of the industry that have made this Standard possible.

Also gratefully acknowledged is the previous work of the Composite Steel Deck Committee of the American Iron and Steel Institute and the Steel Deck with Concrete Standards Committee of the American Society of Civil Engineers, who previously developed the legacy Standard for Structural Design of Composite Slabs (ASCE 3).

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1. General

1.1 Scope:

A. This Standard for Composite Steel Floor Deck-Slabs, hereafter referred to as the Standard, shall govern the materials, design, and erection of composite concrete slabs utilizing cold formed steel deck functioning as a permanent form and as reinforcement for positive moment in floor and roof applications in buildings and similar structures.

B. The Appendices shall be part of the Standard.

C. The User Notes, User Note Attachments, and Commentary shall not be part of the Standard.

User Note: User Notes, User Note Attachments, and Commentary are intended to provide practical guidance in the use and application of this Standard.

D. Where the Standard refers to "designer", this shall mean the entity that is responsible to the Owner for the overall structural design of the project, including the steel deck.

User Note: This is usually the Structural Engineer of Record.

E. Equations that appear in this Standard are compatible with the inch-pounds system of units. However, any consistent system of units shall be permitted to be used. SI units or equations shown in parentheses in this standard are for information only, and are not part of this Standard.

F. Terms not defined in this Standard, AISI S100 or AISI/AISC shall have the ordinary accepted meaning for the context for which they are intended.

G. It shall be permitted to specify deck base metal thickness either by dimensional thickness, or by gage when the relationship of base metal thickness to gage has been defined by the deck manufacturer. However, for the purpose of design, the dimensional thickness shall be used.

User Note: Both AISI and SDI now specify steel thickness in terms of design thickness in lieu of gage thickness. Gage thicknesses, however, are still commonly referred to in the metal deck industry. Table UN-1.1 shows common gages and corresponding uncoated design and minimum steel thicknesses.

Table UN-1.1

Gage No.	Design Thickness		Minimum Thickness[1]	
	in.	mm.	in.	mm.
22	0.0295	0.75	0.028	0.71
20	0.0358	0.91	0.034	0.86
18	0.0474	1.20	0.045	1.14
16	0.0598	1.52	0.057	1.44

[1] Minimum thickness is 95% of the design thickness

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1.2 Reference Codes, Standards, and Documents:

A. Codes and Standards: The following documents or portions thereof are referenced in this standard and shall be considered part of the requirements of this Standard. Where these documents conflict with this standard, the requirements of this Standard shall control

1. American Concrete Institute (ACI)
   a. ACI 318-11, Building Code Requirements for Structural Concrete
2. American Iron and Steel Institute (AISI)
   a. AISI S100-07 w/S2-10, North American Specification for the Design of Cold-Formed Steel Structural Members, Including Supplement 2 (February 2010)
   b. AISI S905-08, Test Methods for Mechanically Fastened Cold-Formed Steel Connections
   c. AISI S907-08, Test Standard for Cantilever Test Method for Cold-Formed Steel Diaphragms
   d. AISI/AISC, Standard Definitions for Use in the Design of Steel Structures, 2007 edition
3. American Institute of Steel Construction (AISC)
   a. ANSI/AISC 360-10, Specification for Structural Steel Buildings
4. American Society for Testing and Materials (ASTM)
   a. ASTM A615 / A615M - 09b Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
   b. ASTM A653 / A653M - 10 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
   c. ASTM A706 / A706M - 09b Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
   d. ASTM A820 / A820M – 06, Standard Specification for Steel Fibers for Fiber-Reinforced Concrete
   e. ASTM A1008 / A1008M - 10, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
   f. ASTM A1064 / A1064M - 10 Standard Specification for Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
   g. ASTM C1116 / C1116M - 10 Standard Specification for Fiber-Reinforced Concrete
   h. ASTM D7508 / D7508M - 10 Standard Specification for Polyolefin Chopped Strands for Use in Concrete
5. American Society of Civil Engineers (ASCE)
   a. SEI/ASCE 7-10, Minimum Design Loads for Buildings and Other Structures
6. American Welding Society (AWS)
   a. AWS D1.1:2010, Structural Welding Code-Steel
   b. AWS D1.3:2008, Structural Welding Code-Sheet Steel
7. Steel Deck Institute (SDI)
   a. SDI-T-CD-2011, Test Standard for Composite Steel Deck-Slabs

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B. Reference Documents: The following documents or portions thereof are referenced in this standard and shall be considered part of the requirements of this Standard. Where these documents conflict with this standard, requirements of this Standard shall govern:

1. Steel Deck Institute (SDI)
   a. SDI-DDM, Diaphragm Design Manual, 3rd Edition, including Appendices I through VI

User Note: The following documents are referenced within the user notes:

1. American Association of State Highway and Transportation Officials (AASHTO)
   a. AASHTO LRFD Bridge Design Specifications, Customary U.S. Units, 5th Edition, with 2010 Interim Revisions
2. American Concrete Institute (ACI)
   a. ACI 215R-92, Considerations for Design of Concrete Structures Subjected to Fatigue Loading
   b. ACI 302.1R-04, Guide for Concrete Floor and Slab Construction
   c. ACI 224.1R-07, Causes, Evaluation, and Repair of Cracks in Concrete Structures
   d. ACI 318-11, Building Code Requirements for Structural Concrete
   e. ACI 544 3R-08, Guide for the Specification, Proportioning and Production of Fiber Reinforced Concrete
   f. ACI Concrete Terminology, http://terminology.concrete.org
3. American Institute of Steel Construction (AISC)
   a. AISC Design Guide No. 11, Floor Vibrations Due to Human Activity, 1997
4. American Iron and Steel Institute (AISI)
   a. AISI S100-07 w/S2-10, North American Specification for the Design of Cold-Formed Steel Structural Members, Including Supplement 2 (February 2010)
   b. AISI S907-08, Test Standard for Cantilever Test Method for Cold-Formed Steel Diaphragms
5. American Society for Testing and Materials (ASTM)
   a. ASTM A653 / A653M - 10 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
   b. ASTM A1008 / A1008M - 10, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
   c. ASTM E119 - 10b, Standard Test Methods for Fire Tests of Building Construction and Materials
6. Concrete Reinforcing Steel Institute (CRSI)
   a. CRSI Manual of Standard Practice, 28th Edition, 2009
7. Steel Deck Institute (SDI)
   a. SDI-CDD, Composite Deck Design Handbook, 2nd Edition
   b. SDI-DDM, Diaphragm Design Manual, 3rd Edition, including Appendices I through VI
   c. SDI-MDCQ, Metal Deck and Concrete Quantities (SDI White Paper)
   d. SDI-MOC, Manual of Construction with Steel Deck, 2nd Edition

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e. SDI Position Statement "Use of Composite Steel Floor Deck in Parking Garages."

8. Underwriters Laboratories (UL)
   a. Fire Resistance Directory
9. Wire Reinforcing Institute (WRI)
   a. WWR-500-R-10, Manual of Standard Practice-Structural Welded Wire Reinforcement

1.3 Construction Documents: The construction documents shall describe the composite slabs that are to be constructed and shall include not less than the following information:

A. Loads
   1. Composite slab loads as required by the applicable building code. Where applicable, load information shall include concentrated loads.
   2. Assumed construction phase loads.

B. Structural framing plans for all composite slabs showing the size, location and type of all deck supports.

C. Deck and Deck Attachment
   1. Depth, type (profile), and design thickness.
   2. Deck material (including yield strength) and deck finish.
   3. Deck attachment type, spacing, and details.

D. Concrete and Reinforcing
   1. Specified concrete strength, f'_c.
   2. Specified concrete density (and tolerance if required for fire rating assembly).
   3. Specified strength or grade of reinforcing steel or welded wire reinforcement (if used).
   4. Size, extent and location of all reinforcement (if used).
   5. Slab thicknesses.
   6. Discontinuous fiber reinforcement material, type and dosage (if used).

User Note: The following is an example of a composite slab as it could be specified on the contract drawings: "Composite slab shall consist of 2 inch deep G-60 galvanized composite steel deck, design thickness 0.0358 inch (20 gage), (Type XX by XX, Inc. or approved equivalent) with 3 inch thick, 3000 psi, normal-weight concrete topping (total thickness = 5 inches) reinforced with XXX."

2. Products

2.1 Material:

A. All sheet steel used for deck or accessories shall have a minimum specified yield stress that meets or exceeds 33 ksi (230 Mpa).
   1 For the case where the steel deck acts as a form, design yield and tensile stresses shall be determined in accordance with AISI S100, Section A2.
   2. For the case where the steel deck acts as tensile reinforcement for the composite deck-slab, the steel shall conform to AISI S100, Section A2. When the ductility of the steel measured over a two-inch (50 mm) gage length is 10% or greater, the maximum design yield stress shall not exceed the lesser of 50 ksi or Fy. When the ductility of the steel measured over a two-inch (50 mm) gage length is less than 10%, the maximum design yield stress shall not exceed the lesser of 50 ksi (345 Mpa) or 0.75 Fy.

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3. When the ductility of the steel used for deck, measured over a two-inch (50 mm) gage length, is less than 10%, the ability of the steel to be formed without cracking or splitting shall be demonstrated.

B. Sheet steel for deck shall conform to AISI S100, Section A2.

Commentary: Most steel deck is manufactured from steel conforming to ASTM A1008 /A1008M, Structural Sheet for uncoated or uncoated top/painted bottom deck or from ASTM A653 / A653M, Structural Sheet for galvanized deck. In most cases the designer will choose one finish or the other. However, both types of finish may be used on a project, in which case the designer must indicate on the plans and project specifications the areas in which each is used. (Refer to Section 2.3 of this standard). Stainless steel is not recommended due to the lack of available performance data.

C. Sheet steel for accessories that carry defined loads shall conform to AISI S100, Section A2. Sheet steel for non-structural accessories that do not carry defined loads shall be permitted to be any steel that is adequate for the proposed application.

D. Concrete and Reinforcement:

1. Concrete placed on steel deck shall conform to ACI 318, Chapters 3, 4 and 5, except as modified by Sections 2.1.D.2 and 2.1.D.3.
2. The specified concrete compressive strength shall not be less than 3000 psi (21 MPa). The maximum compressive strength used to calculate the strength of the composite deck-slab shall not exceed 6000 psi (42 MPa).

User Note: Load tables and labeled fire resistant rated assemblies may require concrete compressive strengths in excess of 3000 psi. The average compressive strength of the concrete may exceed 6000 psi, but a maximum strength of 6000 psi is to be used in calculating the strength of the composite deck-slab.

3. Admixtures containing chloride salts or other substances that are corrosive or otherwise deleterious to the steel deck and embedded items shall not be permitted.
4. Steel Reinforcing shall conform to the following:
   a. Deformed reinforcing bars: ASTM A615 or ASTM A706.
   b. Welded wire reinforcement: ASTM A1064.
   c. Other deformed reinforcing bars or welded wire reinforcement as permitted by ACI 318, Section 3.5.3.
5. Discontinuous fiber reinforcement shall conform to the following:
   a. Steel fibers: ASTM A820.
   b. Macrosynthetic fibers: ASTM D7508.

2.2 Tolerance of Delivered Material:

A. The minimum uncoated steel thickness as delivered to the job site shall not at any location be less than 95% of the design thickness, however lesser thicknesses shall be permitted at bends, such as corners, due to cold-forming effects.

User Note: The minimum delivered thickness is in accordance with AISI S100.

B. Panel length shall equal the specified panel length, plus or minus 1/2 inch (13mm).

C. Panel cover width shall be no less than 3/8 inch (10 mm) less than the specified panel width, nor more than 3/4 inch (19 mm) greater than the specified width.

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D. Panel camber and/or sweep shall not be greater than 1/4 inch in a 10 foot length (6 mm in 3 m).

E. Panel end out of square shall not exceed 1/8 inch per foot of panel width (10 mm per m).

2.3 Finish:

A. Galvanizing shall conform to ASTM A653 / A653M

B. A shop coat of primer paint (bottom side only) shall be applied to steel sheet if specified by the designer.

C. The finish on the steel deck shall be specified by the designer.

Commentary: The finish on the steel composite deck must be specified by the designer and be suitable for the environment to which the deck is exposed within the finished structure. Because the composite deck is the positive bending reinforcement for the slab, its service life should at least be equal to the design service life of the structure. Zinc-Aluminum finishes are not recommended. When composite deck with an unpainted top and painted bottom is used, the primer coat is intended to protect the steel for only a short period of exposure in ordinary atmospheric conditions and shall be considered an impermanent and provisional coating. In highly corrosive or chemical atmospheres or where reactive materials could be in contact with the steel deck, special care in specifying the finish should be used, which could include specialized coatings or materials. If specifying painted deck in areas that require spray-on fireproofing, the paint must be permitted by the applicable fire rated assembly. Not all paints are approved for fire rated assemblies. This requirement must be clearly called out in the contract documents. In general, there are three types of fire resistive assemblies; those achieving the fire resistance by membrane protection, direct applied protection, or with an unprotected assembly. Of these three, only the systems that utilize direct applied protection are concerned with the finish of the steel deck. In these systems, the finish of the steel deck can be the factor that governs the fire resistance rating that is achieved. In assemblies with direct applied fire protection the finish (paint) is critical. In the Underwriters Laboratories Fire Resistance Directory, some deck manufacturing companies have steel deck units that are classified in some of the D700, D800, and D900-series concrete and steel floor units. These classified deck units (Classified Steel Floor and Form Units) are shown as having a galvanized finish or a phosphatized/painted finish. These classified deck units have been evaluated for use in these specific designs and found acceptable.

2.4 Design:

A. Deck as a form

1. Design by either Allowable Strength Design (ASD) or Load and Resistance Factor Design (LRFD) shall be permitted. The section properties and allowable strength (ASD) or design strength (LRFD) for the steel deck shall be computed in accordance with AISI S100.
2. Deck shall be evaluated for strength under the following load combinations:
   a. Allowable Stress Design

$$w_{dc} + w_{dd} + w_{lc} \qquad \text{(Eq. 2.4.1)}$$

$$w_{dc} + w_{dd} + P_{lc} \qquad \text{(Eq. 2.4.2)}$$

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$w_{dd} + w_{cdl}$ (Eq. 2.4.3)

Where:

w_{dc} = dead weight of concrete
w_{dd} = dead weight of the steel deck
w_{lc} = uniform construction live load (combined with fluid concrete) not less than 20 psf (0.96 kPa)
w_{cdl} = uniform construction live load (combined with bare deck), not less than 50 psf (2.40 kPa)
P_{lc} = concentrated construction live load per unit width of deck section; 150 pounds on a 1 foot width (2.19 kN on a 1 meter width)

User Note: The uniform construction live load of 20 psf is considered adequate for typical construction applications that consist of concrete transport and placement by hose and concrete finishing using hand tools. The designer typically has little control over means-and-methods of construction, and should bring to the attention of the constructor that bulk dumping of concrete using buckets, chutes, or handcarts, or the use of heavier motorized finishing equipment such as power screeds, may require design of the deck as a form using uniform construction live loads, w_{lc} ,of 50 psf or greater. Section A1.3.1 requires that the designer include the assumed construction loads in the construction documents and it is suggested that the construction documents require verification of adequacy by the constructor.

User Note: The designer should account for additional loads attributable to concrete ponding due to deflections of the structural system, including deck and support framing. See SDI-MDCQ for additional information.

b. Load and Resistance Factor Design

$1.6w_{dc} + 1.2w_{dd} + 1.4w_{lc}$ (Eq. 2.4.4)

$1.6w_{dc} + 1.2w_{dd} + 1.4P_{lc}$ (Eq. 2.4.5)

$1.2w_{dd} + 1.4w_{cdl}$ (Eq. 2.4.6)

Commentary: The load factor used for the dead weight of the concrete is 1.6 because of delivering methods and an individual sheet can be subjected to this load. The use of a load factor of 1.4 for construction load in LRFD design is calibrated to provide equivalent design results in ASD design. Refer to the commentary of AISI S100 for additional information.

3. Cantilever spans shall be evaluated for strength under the following load combinations:
   a. Allowable Strength Design: Equations 2.4.1 and 2.4.2 shall be applied to both the cantilever span and the adjacent span. The concentrated construction live load (P_{lc}) shall be applied at the end of the cantilever.
   b. Load and Resistance Factor Design: Equations 2.4.4 and 2.4.5 shall be applied to both the cantilever span and the adjacent span. The concentrated construction live load (P_{lc}) shall be applied at the end of the cantilever.

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4. Special loading considerations:
   a. The specified construction live loads shall be increased when required by construction operations.
   b. Loads shall be applied in a sequence that simulates the placement of the concrete, in accordance with Appendix 1. Rational analysis shall be permitted to be used for developing shear and moment diagrams and calculating deflections for non-uniform spans.

Commentary: The loading shown in Figure 1 of Appendix 1 is representative of the sequential loading of fresh concrete on the deck. The 150 pound per foot of width (2.19 kN per 1 m of width) load is the equivalent of distributing a 300 pound (1.33 kN) worker over a 2 foot (600 mm) width. Experience has shown this to be a conservative distribution.

Single span deck conditions have no redundancy because they are statically determinate, as opposed to multi-span conditions that are statically indeterminate. Because of this lack of redundancy, additional consideration should be given to proper specification of construction live and dead loads. Allowable construction spans for single-span deck may be shorter than for multi-span applications, and the designer must consider this in locations where it is impossible to install the deck in a multi-span condition, such as between stair and elevator towers. Whenever possible, the deck should be designed as a multi-span system that does not require shoring during concrete placement.

The specified construction live loads reflect nominal loads from workers and tools and do not include loads of equipment such as laser screeds or power trowels nor additional concrete weight due to ponding. If anticipated construction activities include these additional loads, they should be considered in the design.

5. Deck Deflection:
   a. Calculated deflections of the deck as a form shall be based on the load of the concrete as determined by the design slab thickness and the self-weight of the steel deck, uniformly loaded on all spans, shall be limited to the lesser of 1/180 of the clear span or 3/4 inch (19 mm). Calculated deflections shall be relative to supporting members.
   b. The deflection of cantilevered deck as a form, as determined by slab thickness and self-weight of the steel deck, shall not exceed a/90, where "a" is the cantilever length, nor 3/4 inches (19 mm).

Commentary: The deflection calculations do not take into account construction loads because these are considered to be temporary loads. The deck is designed to always be in the elastic range, so removal of temporary loads will allow the deck to recover, unless construction overloads cause the stress in the deck to exceed the elastic limits of the deck. The supporting structural steel also deflects under the loading of the concrete.

The designer is urged to check the deflection of the total system. Typical load tables are based on uniform slab thickness. If the designer wants to include additional concrete loading on the deck because of frame deflection, the additional load should be shown on the design drawings or stated in the deck section of the contract documents.

6. Minimum Bearing and Edge Distance: Minimum bearing lengths and fastener edge distances shall be determined in accordance with AISI S100.

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User Note: Figure 2 in Appendix 1 indicates support reactions. The designer should check the deck web crippling capacity based on available bearing length.

7. Diaphragm Shear Capacity: Diaphragm strength and stiffness shall be determined utilizing the bare steel deck capacity without concrete in accordance with:
   a. SDI-DDM
   b. Tests conducted in accordance with AISI S907
   c. Other methods approved by the building official.

Commentary: Unless otherwise required by the governing building code, safety factors and resistance factors should be as shown in Table D5 of AISI S100 for bare steel deck diaphragms. When SDI-DDM is the basis of diaphragm design, fasteners and welds that do not have flexibility and strength properties listed in SDI-DDM Section 4 can demonstrate flexibility and strength properties through testing in accordance with AISI S905 or other testing methods. Fastener or weld strength defined in AISI S100 or other methods can be used with the SDI-DDM method. It is always conservative to neglect the contribution of sidelap connections to diaphragm strength and stiffness. Side lap fillet weld and top seam and side seam weld flexibility can be calculated in accordance with SDI-DDM Section 4.4 and sidelap fillet weld and side seam weld strength can be calculated in accordance with AISI S100.

8. Connections: Deck shall be attached to supports to resist loads and to provide structural stability for the supporting member Connections shall be designed in accordance with AISI S100 or strengths shall be determined by testing in accordance with AISI S905. Tests shall be representative of the design. When tests are used and the design allows either end laps or single thickness conditions, both conditions shall be tested.

B. Deck and Concrete as a Composite Slab:
   1. Strength: Strength of the composite deck-slab shall be determined in accordance with one of the following methods.
      a. "Prequalified Section Method" as per Appendix 2.
      b. "Shear Bond Method" as per Appendix 3.
      c. Full scale performance testing as per SDI-T-CD.
      d. Other methods approved by the building official.
   2. Deck shall be evaluated for strength under the load combinations required by the applicable building code. In the absence of a building code, the load combinations prescribed by ASCE 7 shall be used.
   3. Load Determination: The superimposed load capacity shall be determined by deducting the weight of the slab and the deck from the total load capacity. Unless composite deck-slabs are designed for continuity, slabs shall be assumed to act on simple spans.

Commentary: Most published live load tables are based on simple span analysis of the composite system; that is, a continuous slab is assumed to crack over each support and to carry load as a series of simple spans.

Commentary: By using the reference analysis techniques or test results, the deck manufacturer determines the live loads that can be applied to the composite deck-slab combination. The results are usually published as uniform load tables. For most

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applications, the deck thickness and profile is selected so that shoring is not required; the live load capacity of the composite system is usually more than adequate for the superimposed live loads. In calculating the section properties of the deck, AISI S100 may require that compression zones in the deck be reduced to an "effective width," but as tensile reinforcement, the total area of the cross section may be used. (See Appendix 3)

Coatings other than those tested may be investigated, and if there is evidence that their performance is better than that of the tested product, additional testing may not be required.

4. Concrete: Specified concrete compressive strength (f'c) shall comply with Section 2.1 and shall not be less then 3000 psi (21 MPa), nor less than that required for fire resistance ratings or durability.

Commentary: Load tables are generally calculated by using a concrete strength of 3000 psi (21 MPa). Composite slab capacities are not greatly affected by variations in concrete compressive strength; but if the strength falls below 3000 psi (21 MPa), it would be advisable to check shear anchor design for composite beam action.

   a. Minimum Cover: The concrete thickness above the top of the steel deck shall not be less than 2 inches (50 mm), nor that required by any applicable fire resistance rating requirements. Minimum concrete cover for reinforcement shall be in accordance with ACI 318.

5. Deflection: Deflection of the composite slab shall be in accordance with the requirements of the applicable building code.
   a. Cross section properties shall be calculated in accordance with Appendix 4.
   b. Additional deflections resulting from concrete creep, where applicable, shall be calculated by multiplying the immediate elastic deflection due to the sustained load by the following factors:
      i. (1.0) for load duration of 3 months.
      ii. (1.2) for load duration of 6 months.
      iii. (1.4) for load duration of 1 year.
      iv. (2.0) for load duration of 5 years.

Commentary: Live load deflections are seldom a controlling design factor. A superimposed live load deflection of span/360 is typically considered to be acceptable. The deflection of the slab/deck combination can be predicted by using the average of the cracked and uncracked moments of inertia as determined by the transformed section method of analysis. Refer to Appendix 4 of this standard or SDI-CDD.

User Note: Limited information on creep deflections is available. This method is similar to the procedure for reinforced concrete slabs. Because the steel deck initially carries the weight of the concrete, only the superimposed loads should be considered when creep deflections are a concern.

User Note: Floor vibration performance is the result of the behavior of entire floor system, including the support framing. The designer should check vibration performance using commonly accepted methods, which may include AISC Design Guide No. 11.

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6. Special Loads: The following loads shall be considered in the analysis and calculations for strength and deflection:
   a. Suspended Loads.
   b. Concentrated Loads.
   c. Moving Loads.
   d. Cyclic Loads.

7. One-way Shear Strength: This section shall be used to determine the one-way shear strength of the composite deck-slab.

$$\phi V_n = \phi_v V_c + \phi_s V_D \le \phi_v 4\sqrt{f'_c} A_c \qquad \text{(Eq. 2.4.7a) (in.-lb)}$$

$$\phi V_n = \phi_v V_c + \phi_s V_D \le \phi_v 0.172\sqrt{f'_c} A_c \qquad \text{(Eq. 2.4.7b) (SI)}$$

Where:

$$V_c = 2\lambda\sqrt{f'_c} A_c \qquad \text{(Eq. 2.4.8a) (in.-lb)}$$

$$V_c = 0.086\lambda\sqrt{f'_c} A_c \qquad \text{(Eq. 2.4.8b) (SI)}$$

V_D = shear strength of the steel deck section calculated in accordance with AISI S100, kips (kN)
A_c = concrete area available to resist shear, in.^{2} (mm^2), see Figure 2-1.
λ = 1.0 where concrete density exceeds 130 lbs/ft^3 (2100 kg/m^3); 0.75 where concrete density is equal to or less than 130 lbs/ft^3 (2100 kg/m^3).
ϕ_v = 0.75
ϕ_s = 0.85

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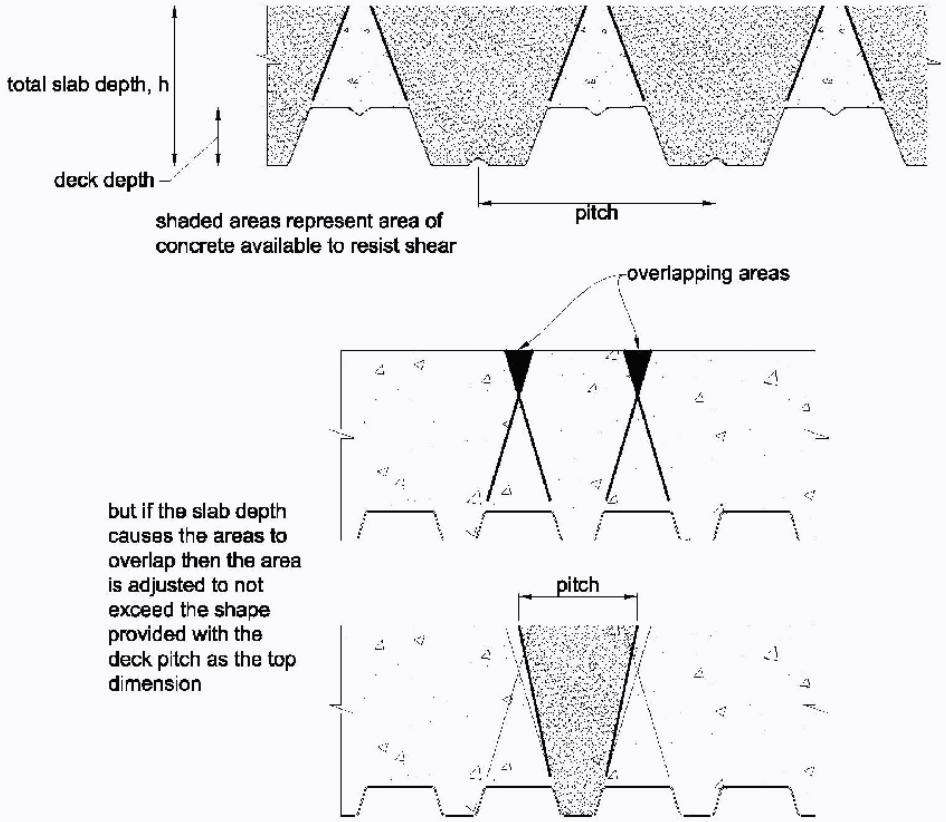


Figure 2-1 One-Way Shear Parameters

8. Punching Shear Resistance: The critical surface for calculating punching shear shall be perpendicular to the plane of the slab and located outside of the periphery of the concentrated load or reaction area. The factored punching shear resistance, V_{pr}, shall be determined as follows:

$$V_{pr} = (2 + 4/\beta_c)\phi_v \sqrt{f'_c} b_o h_c \le 4\phi_v \sqrt{f'_c} b_o h_c \qquad \text{(Eq. 2.4.9a) (in.-lb)}$$

$$V_{pr} = 0.043(2 + 4/\beta_c)\phi_v \sqrt{f'_c} b_o h_c \le 0.172\phi_v \sqrt{f'_c} b_o h_c \qquad \text{(Eq. 2.4.9b) (SI)}$$

Where:

b_o = perimeter of critical section, in. (mm)
h_c = thickness of concrete cover above steel deck, in. (mm)
β_c = ratio of long side to short side of concentrated load or reaction area
ϕ_v = 0.75

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9. Concentrated Loads: Concentrated loads shall be permitted to be laterally distributed perpendicular to the deck ribs in accordance with this section. Alternate lateral load distributions based on rational analysis shall be permitted when allowed by the building official.

a. Concentrated loads shall be distributed laterally (perpendicular to the ribs of the deck) over an effective width, b_e. The load distribution over the effective width, b_e, shall be uniform.

b. The concrete above the top of steel deck shall be designed as a reinforced concrete slab in accordance with ACI 318, transverse to the deck ribs, to resist the weak axis moment, M_{wa}, over a width of slab equal to W. Appropriate load factors as required by ACI 318 shall be applied to the weak axis moment.

$$b_m = b_2 + 2\,t_c + 2\,t_t \qquad \text{(Eq. 2.4.10)}$$

$$b_e = b_m + (2)(1\text{-}x/L)x \le 106.8\,(t_c/h) \qquad \text{(Eq. 2.4.11)}$$
for single span bending

$$b_e = b_m + (4/3)(1\text{-}x/L)x \le 106.8\,(t_c/h) \qquad \text{(Eq. 2.4.12)}$$
for continuous span bending when reinforcing steel is provided in the concrete to develop negative bending.

$$b_e = b_m + (1\text{-}x/L)x \le 106.8\,(t_c/h) \text{ for shear} \qquad \text{(Eq. 2.4.13)}$$

$$W = L/2 + b_3 \le L \qquad \text{(Eq. 2.4.14)}$$

$$M_{wa} = 12\,P\,b_e / (15W) \text{ in.-lb per foot} \qquad \text{(Eq. 2.4.15)}$$
$[\,P\,b_e / (15\,W)$ N- mm per mm $]$

Where:

b_e = Effective width of concentrated load, perpendicular to the deck ribs, in (mm)
b_m = Projected width of concentrated load, perpendicular to the deck ribs, measured at top of steel deck, in. (mm)
b_2 = Width of bearing perpendicular to the deck ribs, in. (mm)
b_3 = Length of bearing parallel to the deck ribs, in. (mm)
h = Depth of composite deck-slab, measured from bottom of steel deck to top of concrete slab, in. (mm)
L = Deck span length, measured from centers of supports, in (mm)
M_{wa} = Weak axis bending moment, perpendicular to deck ribs, of width, in.-lbs, (N-mm per mm of width)
P = Magnitude of concentrated load, lbs (N)
t_c = Thickness of concrete above top of steel deck, in. (mm)
t_t = Thickness of rigid topping above structural concrete (if any), in. (mm)
W = Effective length of concentrated load, parallel to the deck ribs, in. (mm)
x = Distance from center of concentrated load to nearest support, in. (mm)

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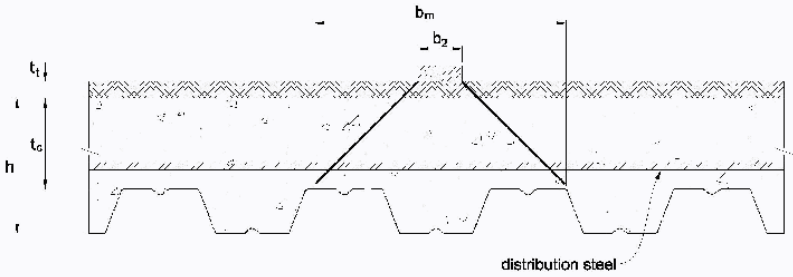


Figure 2-2

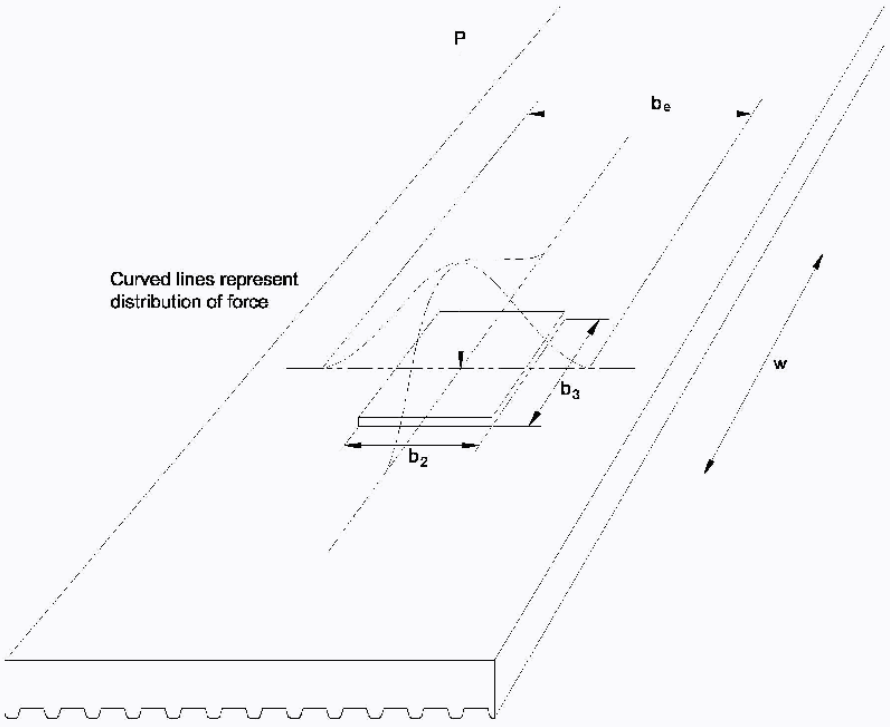


Figure 2-3

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User Note: Figures 2-2 and 2-3 illustrate the dimensions associated with this section.

Commentary: The designer should take into account the sequence of loading. Suspended loads may include ceilings, light fixtures, ducts or other utilities. The designer should be informed of any loads to be applied after the composite slab has been installed. Care should be used during the placement of suspended loads on all types of hanger tabs or other hanging devices for the support of ceilings so that an approximate uniform loading is maintained. The individual manufacturer should be consulted for allowable loading on single hanger tabs. Improper use of hanger tabs or other hanging devices could result in the overstressing of tabs and/or the overloading of the composite deck-slab.

Commentary: Composite floor deck is not recommended as the only concrete reinforcement for use in applications where the floor is loaded with repeated lift truck (forklift) or similar heavy wheeled traffic. (Lift trucks are defined as small power operated vehicles that have devices for lifting and moving product. The definition of lift trucks does not include manually operated "pallet jacks"). Loading from lift trucks includes not only moving gravity loads, but also includes vertical impact loading and in-plane loading effects from starting, stopping, and turning. The repetitive nature of this loading, including impact, fatigue, and in-plane effects can be more detrimental to the slab-deck performance than the gravity loads. Suspended floor slabs subjected to lift truck traffic have special design requirements to ensure the fatigue stress in the reinforcement is low to keep the cracks sufficiently tight and serviceable to minimize crack spalling due to the hard wheel traffic. The design should only use the steel deck as a stay-in-place form. Structural concrete design recommendations contained in ACI 215R and AASHTO-LRFD are suggested for guidance in the design of these slabs. Due consideration for the stiffness of the supporting framing should be given by the designer.

Composite floor deck has successfully been used in applications that are loaded by occasional "scissor lift" use, and in warehouses with industrial racks without lift truck traffic and in areas serviced by "pallet jacks." Proper analysis and design for moving and point loads must be performed.

Commentary: For additional information regarding the use of composite steel deck in parking structure applications, refer to the SDI Position Statement "Use of Composite Steel Floor Deck in Parking Garages."

10. Negative Reinforcement: When the slab is designed for negative moments, the deck shall be designed to act in the negative moment region only as a permanent form. Concrete in negative moment regions shall be designed by the designer as a conventional reinforced concrete slab in accordance with ACI 318. Design moments and shears shall be permitted to be calculated by any acceptable method of analysis which considers continuity. The coefficient method of Chapter 8 of ACI 318 shall be considered to be an acceptable analysis method.

Commentary: Composite steel deck does not function as compression reinforcing steel in areas of negative moment. If the designer desires a continuous slab, then negative bending reinforcing should be designed using conventional reinforced concrete design techniques in compliance with ACI 318. The reinforcement chosen for temperature and shrinkage reinforcement most likely will not supply sufficient area of reinforcement for negative bending over the supports.

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11. Cantilevered Slabs: At cantilevered slabs, the deck shall be considered to act only as a permanent form. The slab shall be designed by the designer for negative bending in accordance with ACI 318.

Commentary: At cantilevered slabs, the deck acts only as a permanent form. Composite steel deck does not function as compression reinforcing steel at cantilevers. Negative bending reinforcing at the cantilever should be designed using conventional reinforced concrete design techniques in compliance with ACI 318. The reinforcement chosen for temperature and shrinkage reinforcing most likely will not supply sufficient area of reinforcement for negative bending at the cantilever.

12. Diaphragm Shear Capacity: Diaphragm strength and stiffness shall be determined in accordance with:
    a. SDI-DDM
    b. Tests conducted in accordance with AISI S907
    c. Other methods approved by the building official.

Commentary: Unless otherwise required by the governing building code, when using the SDI-DDM method, the safety and resistance factors found in the SDI-DDM should be used. When SDI-DDM is the basis of diaphragm design, fasteners and welds that do not have flexibility and strength properties listed in SDI-DDM Section 4 can demonstrate flexibility and strength properties through testing in accordance with AISI S905 or other testing methods. Fastener or weld strength defined in AISI S100 or other methods can be used with the SDI-DDM method. It is always conservative to neglect the contribution of sidelap connections to diaphragm strength and stiffness. Side lap fillet weld and top seam and side seam weld flexibility can be calculated in accordance with SDI-DDM Section 4.4 and sidelap fillet weld and side seam weld strength can be calculated in accordance with AISI S100.
When strength is based on test, the safety and resistance factors should be determined in accordance with AISI S100 Chapter F, but should not be less critical than those for concrete diaphragms contained in ACI 318, Section 9.3. The following statistical data may be used with AISI S100 for calculating the resistance factor:

β_o = 3.50
M_m = 1.10
V_m = 0.10
F_m = 0.90
V_f = 0.10
P_m = 1.00

This statistical data is based on a connection limit state, and differs from the data in the SDI T-CD standard for gravity loads. When using this data, the factor if safety should be calculated in accordance with AISI S100, Section F.

User Note: In instances where the required diaphragm capacity exceeds what can be calculated using SDI-DDM, a designer can potentially develop additional capacity by designing the diaphragm as a reinforced concrete diaphragm in accordance with ACI 318. This design option as a concrete diaphragm is outside the scope of this standard.

13. Reinforcement for Temperature and Shrinkage:

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a. Reinforcement for crack control purposes other than to resist stresses from quantifiable structural loadings shall be permitted to be provided by one of the following methods:

1. Welded wire reinforcement or reinforcing bars with a minimum area of 0.00075 times the area of the concrete above the deck (per foot or meter of width), but not less than the area provided by 6 x 6 – W1.4 x W1.4 (152 x 152 – MW9 x MW9) welded wire reinforcement.
2. Concrete specified in accordance with ASTM C1116, Type I, containing steel fibers meeting the criteria of ASTM A820, Type I , Type II, or Type V, at a dosage rate determined by the fiber manufacturer for the application, but not less than 25 lb/cu yd (14.8 kg/cu meter).
3. Concrete specified in accordance with ASTM C1116, Type III, containing macrosynthetic fibers meeting the criteria of ASTM D7508 at a dosage rate determined by the fiber manufacturer for the application, but not less than 4 lb/cu yd (2.4 kg/m^3).

User Note: It is suggested that if fibers are used for this purpose, that the designer include quality control provisions in accordance with ACI 544.3R in the project specifications.

Commentary: Concrete floor slabs employing Portland cement will start to experience a reduction in volume as soon as they are placed. Where shrinkage is restrained, cracking will occur in the floor. The use of the appropriate types and amount of reinforcement for shrinkage and temperature movement control is intended to result in a larger number of small cracks in lieu of a fewer number of larger cracks. Even with the best floor design and proper construction, it is unrealistic to expect crack free floors. Every owner should be advised by both the designer and contractor that it is normal to expect some amount of cracking and that such occurrence does not necessarily reflect adversely on either the adequacy of the floor's design or quality of the construction.

Cracking can be reduced when the causes are understood and preventative steps are taken in the design phase. The major factors that the designer can control concerning shrinkage and cracking include cement type, aggregate type and gradation, water content, water/cement ratio, and reinforcement.

Most measures that can be taken to reduce concrete shrinkage will also reduce the cracking tendency. Drying shrinkage can be reduced by using less water in the mixture and the largest practical maximum-size aggregate. A lower water content can be achieved by using a well-graded aggregate and lower initial temperature of the concrete. Designers are referred to ACI 302.1R and ACI 224.1 for additional information.

Although cracking is inevitable, properly placed reinforcement used in adequate amounts will reduce the width of individual cracks. By distributing the shrinkage strains, the cracks are distributed so that a larger number of narrow cracks occur instead of a few wide cracks. Additional consideration by the designer may be required to further limit the size and frequency of cracks. Additional provisions for

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crack control are frequently required where concrete is intended to be exposed, floors that will be subjected to wheel traffic, and floors which will receive an inflexible floor covering material (such as tile).

Modifications to fiber dosages will vary depending upon the specific fiber manufacturers' recommendations. As a general rule, reduced crack widths can be achieved by increasing the amount of steel reinforcement, or by increasing the fiber dosage and/or minimizing the shrinkage potential of the concrete.

Because composite deck-slabs are typically designed as a series of simple spans, flexural cracks may form over supports. Flexural cracking of the concrete in negative moment regions of the slab (over beams and girders) is not typically objectionable unless the floor is to be left exposed or covered with inflexible floor coverings. Flexural cracking and crack widths can be minimized by one or more of the following: 1.) by paying strict attention to preventing overloads at deck midspan during construction, as this is a common source of flexural cracks; 2.) utilizing a stiffer steel deck; 3.) reducing the slab span. If flexural cracks must be strictly controlled, consideration should be given to designing the composite deck-slab for negative moments over supports (both beams and girders) and providing appropriate reinforcing steel at these supports.

14. Fire Resistance: The designer shall consider required fire resistance ratings in the design of the composite slab.

Commentary: Fire rating requirements may dictate the concrete strength or density. Many fire rated assemblies that use composite floor decks are available. In the Underwriters Laboratories *Fire Resistance Directory*, the composite deck constructions show hourly ratings for restrained and unrestrained assemblies. ASTM E119 provides information in Appendix X3 titled "Guide for Determining Conditions of Restraint for Floor and Roof Assemblies and for Individual Beams", indicating that deck attached to steel or concrete framing, and interior spans of wall supported deck may be considered to be restrained, while end spans of wall supported deck should be considered to be unrestrained . Designers should be aware that some fire rated assemblies set limits on load capacity and/or place restrictions on fastener type and spacing.

2.5 Accessories:

A. Accessories for structural applications shall be of dimensions and thickness suitable for the application, and shall be designed in accordance with AISI S100 or AISC 360, as applicable.

Commentary: For convenience, minimum suggested pour stop thicknesses (gages) are shown in User Note Attachment 1. For applications that exceed the scope of the attachment, alternate designs in accordance with AISI S100 and AISC 360 are acceptable.

3.0 Execution

3.1 Installation/General:

A. Temporary shoring, if required, shall be designed to resist the loads indicated in Section 2.4.A.2. The shoring shall be designed and installed in accordance with

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standards applicable to the specific shoring system and shall be left in place until the concrete attains 75% of its specified design strength.

User Note: Typical practice is to retain shoring in place for a minimum of 7 days.

B. Deck Support Attachment: Steel deck shall be anchored to structural supports by arc spot welds, fillet welds, or mechanical fasteners. The average attachment spacing of deck at supports perpendicular to the span of the deck panel shall not exceed 12 inches (300 mm) on center, with the maximum attachment spacing not to exceed 18 inches (460 mm), unless more frequent fastener spacing is required for diaphragm design. The deck shall be adequately attached to the structure to prevent the deck from slipping off the supporting structure.

User Note: When the side lap is a standing seam interlock, it may be permissible to only attach the female side, subject to design requirements, when the female hem holds the male leg down. When the side lap is a nestable side lap a single fastener through both sheets of steel deck is acceptable to secure both sheets.

C. Deck Sidelap Fastening: For deck with spans less than or equal to 5 feet (1.5 m), side lap fasteners shall not be required. unless required for diaphragm design. For deck with spans greater than 5 feet (1.5 m), side laps shall be fastened at intervals not to exceed 36 inches (1 m) on center, unless more frequent fastener spacing is required for diaphragm design, using one of the following methods:

1. Screws with a minimum diameter of 0.190 inches (4.83 mm) (#10 diameter).
2. Crimp or button punch.
3. Arc spot welds 5/8 inch (16 mm) minimum visible diameter, minimum 1-1/2 inch (38 mm) long fillet weld, or other weld shown to be substantially equivalent through testing in accordance with AISI S905, or by calculation in accordance with AISI S100, or other equivalent method approved by the building official.
4. Other equivalent methods approved by the building official.

User Note: The above side lap spacing is a minimum. Service loads or diaphragm design may require closer spacing or larger side lap welds. Good metal-to-metal contact is necessary for a good side lap weld. When welding, burn holes are to be expected and are not a grounds for rejection. The SDI does not recommend fillet welded or arc spot welded sidelaps for deck that is thinner than 0.0358 inch design thickness (20 gage) due to difficulty in welding thinner material.

D. Deck Perimeter Attachment Along Edges Between Supports: For deck with spans less than or equal to 5 feet (1.5 m), perimeter attachment shall not be required, unless required for diaphragm design. For deck with spans greater than 5 feet (1.5 m), perimeter edges of deck panels between span supports shall be fastened to supports at intervals not to exceed 36 inches (1 m) on center, unless more frequent fastener spacing is required for diaphragm design, using one of the following methods:

1. Screws with a minimum diameter of 0.190 inches (4.83 mm) (#10 diameter).
2. Arc spot welds with a minimum 5/8 inch (16 mm) minimum visible. diameter, or minimum 1-1/2 inch (38 mm) long fillet weld.
3. Powder actuated or pneumatically driven fasteners.

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User Note: This condition is often referred to as parallel attachment to supports, referring to the support members running parallel or nearly parallel with the flutes of the deck panel. Number 10 screws may not be adequate at thicker edge supports and may fracture due to driving torque resistance. A minimum of a Number 12 screw is recommended at parallel edge supports thicker than 14 gage (0.0747 inch) and a Number 14 screw may be required for thicker and harder steels.

E. Support at the perimeter of the floor shall be designed and specified by the designer.

F. Cantilevers:

1. Side laps shall be attached at the end of the cantilever and at a maximum spacing of 12 inches (300 mm) on center from the cantilevered end at each support.
2. Each deck corrugation shall be fastened at both the perimeter support and the first interior support.
3. The deck shall be completely attached to the supports and at the side laps before any load is applied to the cantilever.
4. Concrete shall not be placed on the cantilever before concrete is placed on the adjacent span.

G. Fastener edge distance shall be as required by the applicable fastener design standard.

H. Deck bearing surfaces to be welded shall be brought into contact as required by AWS D1.3, Section 5.3.2.

User Note: Out of plane support flanges can create knife-edge supports and air gaps between the deck and support. This makes welding more difficult and allows distortion under screw or power actuated fastener washers or heads. Inherent tolerances of the supporting structure should be considered.

3.2 Welding

A. All welding of deck shall be in accordance with AWS D1.3. Each welder shall demonstrate the ability to produce satisfactory welds using a procedure in accordance with ANSI/AWS D1.3.

User Note: SDI-MOC describes a weld quality control test procedure that can be used as a preliminary check for welding machine settings under ambient conditions.

B. For connection of the deck to the supporting structure, weld washers shall be used with arc spot welds on all deck units with metal thickness less than 0.028 inches (22 gage) (0.71 mm). Weld washers shall be a minimum thickness of 0.050 inches (1.27 mm) and have a nominal 3/8 inch (10 mm) diameter hole. Weld washers shall not be used between supports along the sidelaps.

C. Where weld washers are not required, a minimum visible 5/8 inch (16 mm) diameter arc spot weld or arc seam weld of equal perimeter shall be used. Weld metal shall penetrate all layers of deck material at end laps and shall have good fusion to the supporting members.

D. When used, fillet welds to support structure shall be at least 1-1/2 inches (38 mm) long.

E. When steel headed stud anchors are installed to develop composite action between the beam or joist and the concrete slab, the steel headed stud anchor shall be permitted as a substitute for an arc spot weld to the supporting structure. Steel headed stud anchors shall be installed in accordance with AWS D1.1.

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3.3 Mechanical Fasteners

A. Mechanical fasteners, either powder actuated, pneumatically driven, or screws, shall be permitted to fasten deck to supporting framing if fasteners meet project strength and service requirements.

B. When the fasteners are powder actuated or pneumatically driven, the strength per fastener used to determine the maximum fastener spacing and the minimum structural support thickness shall be based on the manufacturers' applicable fastener test report or other documentation acceptable to the designer and building official.

C. Screws shall be acceptable for use without restriction on structural support thickness, however, the screw selected shall have a grip range compatible with the combined thickness of the deck and supporting member.

User Note: Mechanical fasteners (screws, powder or pneumatically driven fasteners, etc.) are recognized as viable anchoring methods, provided the type and spacing of the fastener satisfies the design criteria. Documentation in the form of test data, design calculations, or design charts should be submitted by the fastener manufacturer as the basis for obtaining approval. Strength of mechanically fastened connections are dependant upon both deck and support thickness.

3.4 Accessory Attachment:

A. Structural accessories shall be attached to supporting structure or deck as required for transfer of forces, but at a spacing not to exceed 12 inches (300 mm) on center. Non-structural accessories shall be attached to supporting structure or deck as required for serviceability, but spaced not to exceed 24 inches (600 mm) on center.

B. Mechanical fasteners or welds shall be permitted for accessory attachment.

3.5 Cleaning Prior to Concrete Placement:

A. Surfaces shall be cleaned of debris, including but not limited to, welding rods, stud ferrules that are broken free from the stud, and excess fasteners, prior to concrete placement.

3.6 Reinforcing steel

A. Reinforcing steel shall be installed when required by the construction documents.

User Note: The CRSI Manual of Standard Practice and the WRI Manual of Standard Practice are recommended as references for reinforcing steel placement.

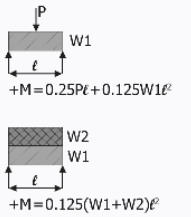
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Appendix 1

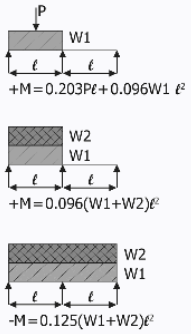
Composite Deck Construction Loading Diagrams

FIGURE 1
Loading Diagrams and Bending Moments

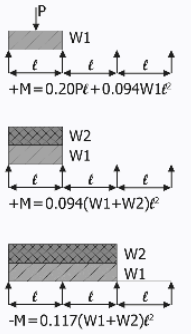
Simple Span Condition



Double Span Condition



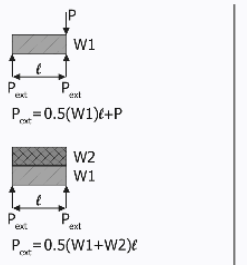
Triple Span Condition



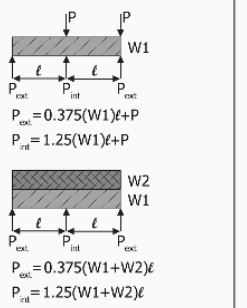
User Note:
See section 1.3 for requirement for construction loads to be shown on construction documents and section 2.4.A for construction loads, including single spans.

FIGURE 2
Loading Diagrams and Support Reactions

Simple Span Condition



Double Span Condition



Triple Span Condition

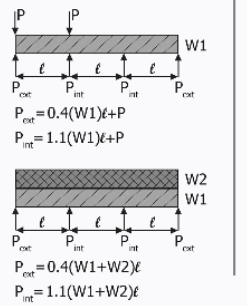
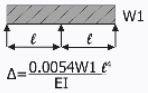


FIGURE 3
Loading Diagrams and Deflections

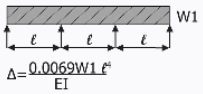
Simple Span Condition



Double Span Condition



Triple Span Condition



Notes for Figures 1, 2, and 3

$P = P_{lc}$	=	concentrated construction live load
I	=	in⁴/ft. (mm⁴/m) - deck moment of inertia
$W1 = w_{dc} + w_{dd}$	=	slab weight + deck weight
$W2 = w_{lc}$	=	uniform construction live load
E	=	29.5 x 10⁶ psi (203,000 MPa)
ℓ	=	clear span length (ft.) (m)

Dimensional consistency requires consistent units when calculating deflections.

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Appendix 2

Strength Determination of Composite Deck-Slab by Pre-Qualified Section Method

A2.1 General

1. This Appendix provides methods for the calculation of strength of composite steel deck-slabs. It shall be permitted to use this method if steel headed stud anchors (studs) are not present on the beam flange supporting the composite steel deck, or if steel headed stud anchors are present in any quantity.
2. Limitations:
   A. Deck shall be limited to galvanized or uncoated steel decks with embossments meeting the requirements for Type I, Type II, or Type III patterns as shown in Figure A2-1, A2-2, A2-3, and A2-4. The design embossment height, p_h, shall not be less than 0.035 inches (0.89 mm) and shall not be greater than 0.105 inches (2.67 mm). Embossments shall not be less than 90% of the design embossment depth.
   B. The embossment factor, p_s, shall not be less than that defined in Table A2-1.

Table A2-1 Minimum Embossment Factor

Deck Embossment Type	Nominal Deck Depth	Minimum p_s
1	1.5 in.	5.5
1	2.0 in.	12.0
1	3.0 in.	18.0
2	1.5 in.	5.5
2	2.0 in.	8.5
2	3.0 in.	8.5
3	1.5 in.	5.5
3	2.0 in.	10.0
3	3.0 in.	12.0

a. For Type 1 deck embossments:

$$p_{s1} = 12\,(l_e / S) \qquad \text{(Eq. A2-1)}$$

b. For Type 2 deck embossments:

$$p_{s2} = 12\,(l_1 + l_2)/S \qquad \text{(Eq. A2-2)}$$

c. For Type 3 deck embossments:

$$p_{s1} = 12\,(\text{sum of } l_1 \text{ lengths within } S_1)/S_1 \qquad \text{(Eq. A2-3)}$$

$$p_{s2} = 12\,(\text{sum of } l_2 \text{ lengths within } S_2)/S_2 \qquad \text{(Eq. A2-4)}$$

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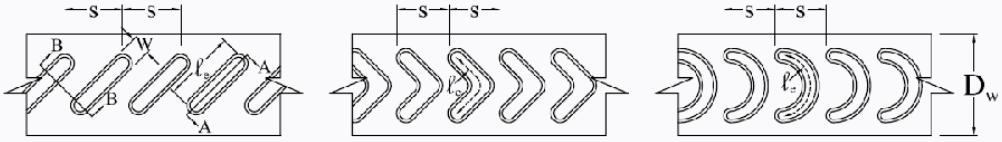


Figure A2-1 – Type 1 Embossments with length measured along centerline

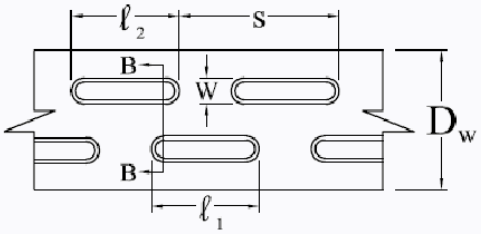


Figure A2-2 – Type 2 Embossments

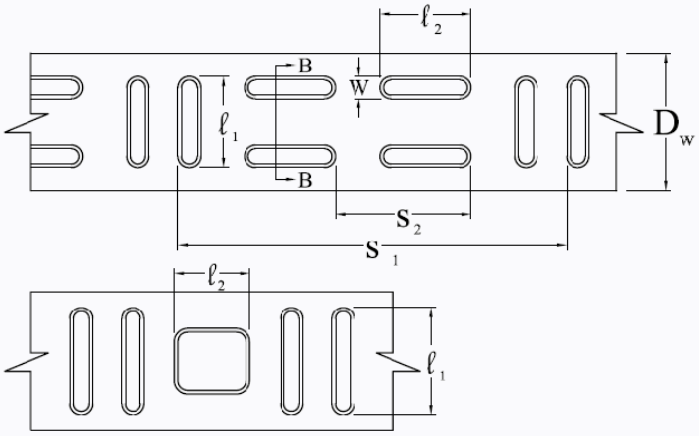


Figure A2-3 - Type 3 Embossments

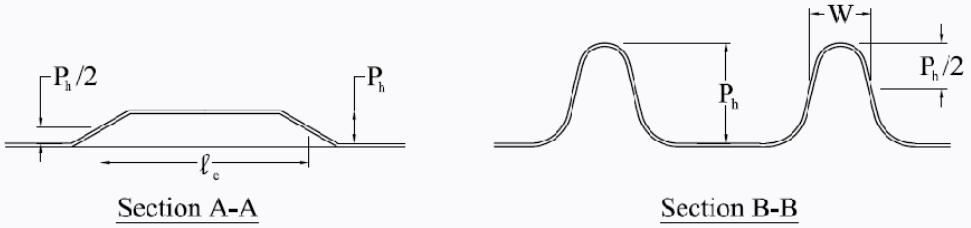


Figure A2-4 - Embossment Section Details

APPENDIX 2

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C. The web angle measured from the horizontal plane, θ, shall be limited to values between 55° and 90° and the webs shall have no reentrant bends in their flat width.

D. The deck section depth, d_d, shall be less than or equal to 3 in. (75 mm)

E. All sheet steel used for deck shall comply with Section 2.1 of this Standard.

F. Concrete shall comply with Section 2.1 of this Standard.

G. The concrete thickness above the steel deck shall be equal to or greater than 2 inches (50mm).

H. Composite deck-slabs shall be classified as under-reinforced. Composite deck-slabs that are classified as over-reinforced shall not be designed using the procedures of this Appendix.

a. Slabs with (c/d) less than the balanced condition ratio $(c/d)_b$ shall be considered under-reinforced, whereas slabs with (c/d) greater than or equal to $(c/d)_b$ shall be considered over-reinforced. The compression depth ratio shall be calculated as:

$$(c/d) = \frac{A_s F_y}{0.85 f'_c d b \beta_1} \qquad \text{(Eq. A2-5)}$$

The compression depth ratio for the balanced condition shall be calculated as:

$$(c/d)_b = \frac{0.003(h - d_d)}{\left(F_y / E_s + 0.003\right) d} \qquad \text{(Eq. A2-6)}$$

Where:

A_s = area of steel deck, in^2/ft (mm^2/m) of slab width

b = unit width of compression face of composite slab, 12 in.(1000 mm)

c = distance from extreme compression fiber to composite neutral axis, in. (mm)

d = distance from extreme compression fiber to centroid of steel deck, in. (mm)

d_d = overall depth of steel deck profile, in. (mm)

E_s = modulus of elasticity of steel deck, psi (MPa)

f'_c = specified compressive strength of concrete, psi (MPa)

APPENDIX 2

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F_y = specified yield strength of steel deck, psi (MPa)
h = nominal out-to-out depth of slab, in. (mm)
β_1 = 0.85 if $f'_c \le 4000$ psi (27.58 MPa)

$$\beta_1 = 1.05 - 0.05\left(\frac{f'_c}{1000}\right) \ge 0.65 \text{ if } f'_c > 4000 \text{ psi} \quad \text{(Eq. A2-7a) (in.-lb)}$$

$$\beta_1 = 1.09 - 0.008\ f'_c \ge 0.65 \text{ if } f'_c > 27.58 \text{ MPa} \quad \text{(Eq. A2-7b) (SI)}$$

3. The strength of a composite deck-slab shall be the least of the following strength limit states:
   A. Flexural strength.
   B. One-way shear strength in accordance with Section 2.4.B.7.
4. For load combinations that include concentrated loads, punching shear in accordance with Section 2.4.B.8 shall be considered.
5. Cracked section properties shall be determined by Appendix 4.

A2.2 Flexural Strength: This section shall be used to determine the flexural strength of the composite deck-slab.

1. The nominal moment capacity shall be calculated as follows:

   A. The resisting moment, M_{no}, of the composite section shall be determined based on cracked section properties.

$$\Phi_s M_{no} = \Phi_s K M_y \quad \text{(Eq. A2-8)}$$

Where:
M_y = Yield moment for the composite deck-slab, considering a cracked cross section
= $F_y I_{cr} / (h - y_{cc})$ (Eq A2-9)

$K = (K_3/K_1) \le 1.0$ (Eq. A2-10)
F_y = yield stress of steel deck, psi (MPa)
h = slab depth measured from top of concrete to bottom of deck, in (mm)
I_{cr} = cracked section moment of inertia, in^4 (mm^4)
M_{no} = nominal resisting moment, kip-in (N-mm)
y_{cc} = distance from top of slab to neutral axis of cracked section, in (mm)
Φ_s = 0.85
M_{nt} = Nominal moment capacity
K_1, K_3 = Coefficients of deck profile and embossment pattern

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B. K_3 shall be calculated as follows:

$K_3 = 1.4$

User Note: Using $K_3 = 1.4$ is appropriate for typical deck applications where the floor is multiple deck panels wide. For instances where the floor is relatively narrow, measured perpendicular to the deck span, the following equation may yield more accurate (conservative) results.

$K_3 = 0.87 + 0.0688N - 0.00222N^2 \leq 1.4$ (Eq. A2-11)

C. K_1 shall be calculated as follows:

For Type 1 Embossment Deck Panels:

$K_1 = 0.07 (D_w)^{0.5} / p_h \leq 1.55$ (Eq. A2-12)

For Type 2 Embossment Deck Panels:

$K_1 = 15 (t) / [D_w (p_h)^{0.5}]$ (Eq. A2-13)

For Type 3 Embossment Deck Panels:

$$K_1 = \frac{(K_{11})p_{s1} + (K_{12})p_{s2}}{p_{s1} + p_{s2}}$$ (Eq. A2-14)

Where:

D_w	=	Width of flat portion of the deck web, in.
K_{11}	=	K_1 calculated for Type 1 embossments in Type 3 pattern
K_{12}	=	K_1 calculated for Type 2 embossments in Type 3 pattern
N	=	Number of cells in a slab width
N	=	w / R
w	=	Slab width, in.(mm)
R	=	Repeating pattern or cell spacing, in.(mm)
p_h	=	Embossment height, in.
t	=	Deck thickness, in.

A2.3 Allowable Strength Design

Allowable Strength Design shall be permitted as an alternate design method.

1. Allowable Strength for Bending: This section shall be used to determine the bending strength of the composite deck-slab.

$M = K_a C F_y S_c$ (Eq. A2-15)

$M_{LL} = M - M_{DL}$ (Eq. A2-16)

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Where:

K_a = $(K_3/K_1) \leq 1.0$ (Eq. A2-17)

M = Allowable moment capacity of composite slab-deck, kip-in. (N-mm)

M_{LL} = Allowable superimposed load moment capacity, kip-in. (N-mm)

M_{DL} = Positive moment caused by casting of the concrete, not including temporary construction loads, kip-in. (N-mm)

C = 0.60

F_y = Yield stress of steel deck, ksi (Mpa)

S_c = Elastic section modulus of the fully composite deck-slab

2. Allowable Strength for One-way Shear: This section shall be used to determine the one-way shear strength of the composite deck-slab.

$V = V_c + V_D$ (Eq. A2-18)

Where:

V = Allowable one-way shear strength of composite deck-slab

V_c = Allowable shear resistance of concrete area, A_c

$V_c = 1.1\lambda\sqrt{f'_c}A_c$ (Eq. A2-19a) (in.-lb)

$V_c = 0.0473\lambda\sqrt{f'_c}A_c$ (Eq. A2-19b) (SI)

V_D = Allowable shear strength of the steel deck section calculated in accordance with AISI S100, kips (kN)

A_c = Concrete area available to resist shear, in^2 (mm^2), see Figure 2-1.

λ = 1.0 where concrete density exceeds 130 lbs/ft^3 (2100 kg/m^3); 0.75 where concrete density is equal to or less than 130 lbs/ft^3 (2100 kg/m^3).

User Note: Further description of the allowable stress design method is found in SDI-CDD, including tables that list values for the elastic section modulus.

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Appendix 3

Strength Determination of Composite Deck-Slab by Shear Bond Method

A3.1 General

1. This Appendix provides methods for the calculation of strength of composite steel deck-slabs by the shear bond method. It shall be permitted to use this method if steel headed stud anchors (studs) are not present on the beam flange supporting the composite steel deck, or if steel headed stud anchors are present in any quantity.
2. Limitations:
   - A. Deck shall be limited to galvanized or top surface uncoated steel decks.
   - B. All sheet steel used for deck shall comply with Section 2.1 of this Standard.
   - C. Concrete shall comply with Section 2.1 of this Standard.
   - D. The concrete thickness above the steel deck shall be equal to or greater than 2 inches (50mm).
3. The strength of a composite deck-slab shall be the least of the following strength limit states:
   - A. Shear bond resistance.
   - B. Flexural strength.
   - C. One-way shear strength in accordance with Section 2.4.B.7.
4. For load combinations that include concentrated loads, punching shear in accordance with Section 2.4.B.8 shall be considered.

A3.2 Shear Bond Resistance

1. The ultimate shear bond resistance of a composite slab section shall be calculated using parameters determined from a testing program of full-scale slab specimens in accordance with SDI-T-CD. The factored shear bond resistance (V_r) of a composite slab shall be determined as follows:

$$V_r = \phi_v V_t \qquad \text{(Eq. A3-1)}$$

Where,

V_r = factored shear bond resistance, pounds/ft (N/m) of slab width,

V_t = tested shear bond resistance, pounds/ft (N/m) of slab width, determined in accordance with SDI-T-CD,

ϕ_v = shear bond resistance factor
= 0.75

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2. The permissible uniform load for shear bond shall be:

$$W_r = \phi_v 2V_t / L \qquad \text{(Eq. A3-2)}$$

Where:

L = deck design span, ft. (m)

A3.3 Flexural Strength

1. Composite slabs subject to flexural failure shall be classified as under-reinforced or over-reinforced slabs depending on the compression depth ratio, (c/d). Slabs with (c/d) less than the balanced condition ratio $(c/d)_b$ shall be considered under-reinforced, whereas slabs with (c/d) greater than or equal to $(c/d)_b$ shall be considered over-reinforced. The compression depth ratio shall be calculated as:

$$(c/d) = \frac{A_s F_y}{f'_c d b \beta_1} \qquad \text{(Eq. A3-3)}$$

The compression depth ratio for the balanced condition shall be calculated as:

$$(c/d)_b = \frac{0.003(h - d_d)}{\left(F_y/E_s + 0.003\right)d} \qquad \text{(Eq. A3-4)}$$

Where:

A_s = area of steel deck, $in.^2/ft$ (mm^2/m) of slab width.
b = unit width of compression face of composite slab, 12 inches (1000 mm).
c = distance from extreme compression fiber to composite neutral axis, in. (mm).
d = distance from extreme compression fiber to centroid of steel deck, in. (mm).
d_d = overall depth of steel deck profile, in. (mm).
E_s = modulus of elasticity of steel deck, psi (MPa).
f'_c = specified compressive strength of concrete, psi (MPa).
F_y = specified yield strength of steel deck, psi (MPa).
h = nominal out-to-out depth of slab, in. (mm).
β_1 = 0.85 if $f'_c \le 4000$ psi (27.58 MPa).

$$\beta_1 = 1.05 - 0.05\left(\frac{f'_c}{1000}\right) \ge 0.65 \text{ if } f'_c > 4000 \text{ psi}$$

$$\beta_1 = 1.09 - 0.008\, f'_c \ge 0.65 \text{ if } f'_c > 27.58 \text{ MPa}$$

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2. Under-reinforced Slabs $(c/d) < (c/d)_b$

A. The factored moment resistance, in positive bending, of an under-reinforced composite slab shall be taken as:

$M_{ru} = \phi_s M_y$ (Eq. A3-5)

M_y = Yield moment for the composite deck-slab, considering a cracked cross section

$M_y = F_y I_{cr} / (h - y_{cc})$

Where,

ϕ_s = 0.85
F_y = yield stress of steel deck, psi (MPa).
I_{cr} = cracked section moment of inertia, in.^{4} (mm^4).
h = slab depth, in.(mm).
y_{cc} = distance from top of slab to neutral axis of cracked section, in (mm).

3. Over-reinforced Slabs $(c/d) \geq (c/d)_b$

A. The factored moment resistance, in positive bending, of an over-reinforced composite slab shall be determined by:

$M_{ro} = \phi_c f'_c b \beta_1 c (d - \beta_1 c/2)$ (Eq. A3-6)

Where:

$c = d\left\{\sqrt{\rho m + \left(\frac{\rho m}{2}\right)^2} - \frac{\rho m}{2}\right\}$ (Eq. A3-7)

$\rho = \frac{A_s}{bd}$ (Eq. A3-8)

$m = \frac{E_s \varepsilon_{cu}}{f'_c \beta_1}$ (Eq. A3-9)

E_s = 29,500,000 psi (203000 MPa)
ε_{cu} = 0.003
ϕ_c = 0.65

B. Equation (A3-6) is valid only for composite slabs where no part of the steel deck has yielded.

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Appendix 4

Section Properties of Composite Deck-Slabs

A4.1 General

This appendix provides methods for the calculation of geometric cross section properties for composite steel deck cross sections with concrete.

User Note: This method will provide conservative results for slabs with reinforcing. The designer may choose to use alternate methods that consider the contribution of the reinforcing steel in this case.

A4.2 Transformed Composite Neutral Axis

The distance y_{cc} from the extreme compression fiber of the concrete to the neutral axis of the transformed composite section shall be determined from Figure A4-1 and Equations A4-1 and A4-3.

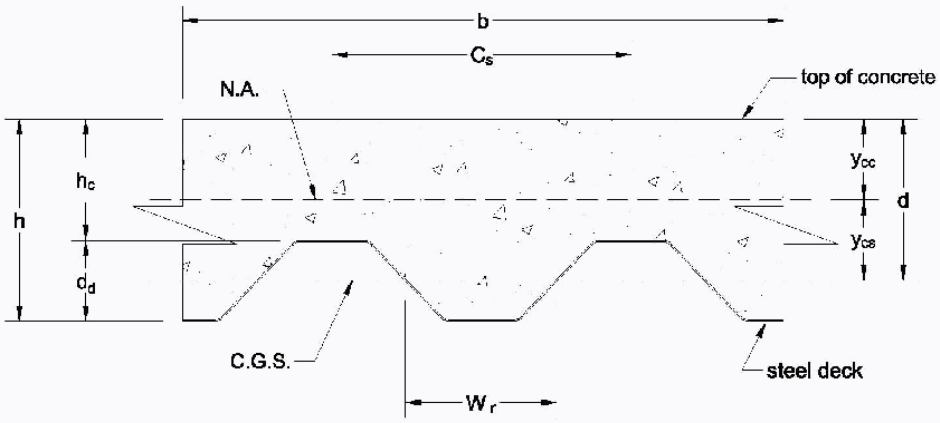


Figure A4-1 - Composite Section

Notes:

1. Section shows non-cellular deck. Section shall be either cellular, a blend of cellular and non-cellular, or non-cellular deck. Unless testing is performed that demonstrates that the interlocking device is capable of developing the full strength of the cross-section, only the element in contact with the concrete shall be considered in the design.
2. C.G.S. = centroidal neutral axis of full, unreduced cross section of steel deck, in. (mm)
3. C_s = pitch of deck ribs in. (mm)
4. N.A. = neutral axis of transformed composite section
5. W_r = average deck rib width in. (mm)
6. d_d = depth of deck in. (mm)

7. h = overall slab depth in. (mm)
8. h_c = depth of concrete above steel deck in. (mm)

A4.3 Moment of Inertia of the Cracked Section

For the cracked moment of inertia

$$y_{cc} = d\left\{\sqrt{2\rho n + (\rho n)^2} - \rho n\right\} \le h_c \qquad \text{(Eq. A4-1)}$$

where

$\rho = \dfrac{A_s}{bd}$

A_s = area of steel deck per unit slab width in^2. (mm^2)

b = unit slab width (12 inches in imperial units)

d = distance from top of concrete to centroid of steel deck

n = modular ratio $= \dfrac{E_s}{E_c}$

E_s = 29500 ksi (203,000 MPa)

E_c = modulus of elasticity of concrete

$E_c = w_c^{1.5}\,(f'_c)^{0.5}$, ksi $(0.043 w_c^{1.5}\,(f'_c)^{0.5}$, MPa)

w_c = concrete unit weight, pcf (kg/m^3)

f'_c = concrete strength, ksi (MPa)

$y_{cs} = d - y_{cc}$ where y_{cc} shall be determined from Equation A4-1.

The cracked moment of inertia transformed to steel, I_c, shall be calculated using Equation A4-2.

$$I_c = \frac{b}{3n} y_{cc}^3 + A_s y_{cs}^2 + I_{sf} \qquad \text{(Eq. A4-2)}$$

where

I_{sf} = moment of inertia of the full (unreduced) steel deck per unit slab width. in^4. (mm^4)

A4.4 Moment of Inertia of the Uncracked Section

For the uncracked moment of inertia

$$y_{cc} = \frac{0.5bh_c^2 + nA_s d + W_r d_d\left(h - 0.5d_d\right)\dfrac{b}{C_s}}{bh_c + nA_s + W_r d_d \dfrac{b}{C_s}} \qquad \text{(Eq. A4-3)}$$

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The uncracked moment of inertia transformed to steel, I_u ,shall be calculated using Equation A4-4.

$y_{cs} = d - y_{cc}$ where y_{cc} shall be determined from Equation A4-3.

$$I_u = \frac{bh_c^3}{12n} + \frac{bh_c}{n}\left(y_{cc} - 0.5h_c\right)^2 + I_{sf} + A_s y_{cs}^2 + \frac{W_r bd_d}{nC_s}\left[\frac{d_d^2}{12} + \left(h - y_{cc} - 0.5d_d\right)^2\right]$$

(Eq. A4-4)

A4.5 Moment of Inertia of the Composite Section

The moment of inertia of the composite section considered effective for deflection computations shall be calculated by Equation A4-5.

$$I_d = \frac{I_u + I_c}{2} \qquad \text{(Eq. A4-5)}$$

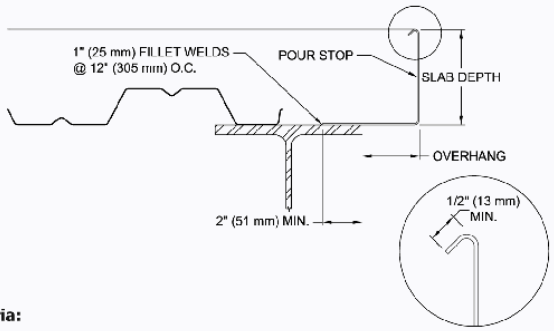
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User Note Attachment 1

Pour Stop Selection Table

SLAB DEPTH (INCHES)	SLAB DEPTH (mm)	OVERHANG - INCHES (mm)												
		0	1	2	3	4	5	6	7	8	9	10	11	12
		0	25	51	76	102	127	152	178	203	229	254	279	305
		POUR STOP TYPES												
4.00	102	20	20	20	20	18	18	16	14	12	12	12	10	10
4.25	108	20	20	20	18	18	16	16	14	12	12	12	10	10
4.50	114	20	20	20	18	18	16	16	14	12	12	12	10	10
4.75	121	20	20	18	18	16	16	14	14	12	12	10	10	10
5.00	127	20	20	18	18	16	16	14	14	12	12	10	10	
5.25	133	20	18	18	16	16	14	14	12	12	12	10	10	
5.50	140	20	18	18	16	16	14	14	12	12	12	10	10	
5.75	146	20	18	16	16	14	14	12	12	12	12	10	10	
6.00	152	18	18	16	16	14	14	12	12	12	10	10	10	
6.25	159	18	18	16	14	14	12	12	12	12	10	10		
6.50	165	18	16	16	14	14	12	12	12	12	10	10		
6.75	171	18	16	14	14	14	12	12	12	10	10	10		
7.00	178	18	16	14	14	12	12	12	12	10	10	10		
7.25	184	16	16	14	14	12	12	12	10	10	10			
7.50	191	16	14	14	12	12	12	12	10	10	10			
7.75	197	16	14	14	12	12	12	10	10	10	10			
8.00	203	14	14	12	12	12	12	10	10	10				
8.25	210	14	14	12	12	12	10	10	10	10				
8.50	216	14	12	12	12	12	10	10	10					
8.75	222	14	12	12	12	12	10	10	10					
9.00	229	14	12	12	12	10	10	10						
9.25	235	12	12	12	12	10	10	10						
9.50	241	12	12	12	10	10	10							
9.75	248	12	12	12	10	10	10							
10.00	254	12	12	10	10	10	10							
10.25	260	12	12	10	10	10								
10.50	267	12	12	10	10	10								
10.75	273	12	10	10	10									
11.00	279	12	10	10	10									
11.25	286	12	10	10										
11.50	292	10	10	10										
11.75	298	10	10											
12.00	305	10	10											

TYPES	DESIGN THICKNESS (INCHES)	DESIGN THICKNESS (mm)
20	0.0358	0.91
18	0.0474	1.20
16	0.0598	1.52
14	0.0747	1.90
12	0.1046	2.66
10	0.1345	3.42



NOTES: This Selection Chart is based on the following criteria:

1. Normal weight concrete 150 PCF (2,400 kg/m^3).
2. Horizontal and vertical deflection is limited to 1/4" (6.3mm) maximum for concrete dead load.
3. Design stress is limited to 20 KSI (138 MPa) for concrete dead load temporarily increased by one-third for the construction live load of 20 PSF (0.96 kPa).
4. Pour Stop Selection Chart does not consider the effect of the performance, deflection, or rotation of the pour stop support which may include both the supporting deck and/or the frame.
5. Vertical leg return lip is recommended for all types (gages).
6. This selection table is not meant to replace the judgment of experienced structural engineers and should be considered as a reference only.

USER NOTE ATTACHMENT 1

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Date Submitted	7/24/2012	**Section**	2212	**Proponent**	T Stafford
Chapter	22	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Reinstates requirements that gable endwalls be structurally continuous between points of lateral support. This language currently exists in the 2010 FBCB.

Rationale

This language is currently contained in the 2010 FBC. No new requirements are being proposed. This proposal reinstates provisions for concrete gable end walls. Section 2114 specifically addresses gable end walls. This language has actually existed in the Florida Building Code since the first edition (2001). During the development of the 2001 FBC, a newspage article highlighted some deficiencies throughout the state with regard to the design of gable end walls. The Structural TAC crafted this language to address these deficiencies. The language clarifies that if the gable end wall is not structural continuous from the floor to the roof, bracing of the discontinuity is required.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5621 Text Modification

Page: 1

SECTION 2212

Gable End Walls.

2212.1 Gable endwalls. Gable endwalls shall be structurally continuous between points of lateral support.

2212.1.2 Cathedral endwalls. Gable endwalls adjacent to cathedral ceilings shall be structurally continuous from the uppermost floor to the ceiling diaphragm or to the roof diaphragm.

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S4993

Date Submitted	7/6/2012	**Section**	2214.3.3	**Proponent**	Thomas Sputo
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Proposal 4944 which adds ANSI/SDI C-2011 to the base code.

Summary of Modification

Delete reference to ASCE 3, an outdated standard for composite deck that was removed from the 2012 IBC, and which, as explained in Proposal 4944, will be replaced in the 2015 IBC by ANSI/SDI C-2011.

Rationale

Proposal 4944 adds ANSI/SDI C-2011 to Chapter 22 as the design reference standard for composite slabs. This standard and this section of the Code is not related to wind resistance and should therefore be removed.

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

Yes

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

Yes

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

No

Does not degrade the effectiveness of the code

No

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4993 Text Modification

3. American National Standards Institute/American Society of Civil Engineers, ANSI/ASCE.

~~a. Specifications for the Design and Construction of Composite Slabs and Commentary on Specifications for the Design and Construction of Composite Slabs, ANSI/ASCE 3~~

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Date Submitted	7/24/2012	**Section**	2214	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

This proposal, submitted on behalf of the steel industry, builds on the changes already recommended in the FL Supplement. It coordinates Section 2214 with the base model code.

Rationale

Please see attached file.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5327 Text Modification

Page: 1

SECTION 2214

HIGH-VELOCITY HURRICANE ZONES— GENERAL—STEEL CONSTRUCTION

2214.1 Design, Fabrication and Erection. ~~Steel and iron members shall be designed by methods admitting of rational analysis according to established principles or methods.~~

~~2214.2~~The design, fabrication and erection of iron and steel for buildings and other structures shall be as set forth in this Chapter. The additional requirements set forth in Sections 2215 through 2221 herein, inclusive, apply to structural steel for buildings and other structures in high-velocity hurricane zones. Additional requirements in Sections 2222 and 2223~~,~~ apply to cold-formed members of sheet or strip steel ~~and light gauge steel~~ construction in high-velocity hurricane zones.

~~2214.3 The following standards, as set forth in Chapter 35 of this code, are hereby adopted.~~

~~1. American Institute of Steel Construction, AISC:~~

~~a. Manual of Steel Construction, 2005, Thirteenth Edition,AISC, Specification for Structural Steel Buildings.360-05.~~

~~b. Serviceability Design Considerations for Low-Rise Buildings, AISC.~~

~~c.Engineering for Steel Construction, AISC.~~

~~d. Detailing for Steel Construction, AISC.~~

~~e. Iron and Steel Beams—1873 to 1952, AISC.~~

~~f. Torsional Analysis of Steel Members, AISC~~

~~2. American Iron and Steel Institute, AISI:~~

~~a. Specification for the Design of Cold-Formed Steel Structural Members, AISI.~~

~~b. Fire-Resistant Steel-Frame Construction, AISI.~~

~~c. Fire-Safe Structural Steel – A Design Guide, AISI.~~

~~d. Designing Fire Protection for Steel Trusses, AISI.~~

~~e. Cold-Formed Steel Design Manual, AISI~~

~~f. Specifications for the Design of Light-Gage Cold-Formed Stainless Structural Members, AISI.~~

~~g. Specification for the Criteria for Structural Application of Steel Cables for Buildings, AISI.~~

~~h. Designing Fire Protection for Steel Columns, AISI.~~

~~i. Design Manual for Structural Tubing, AISI.~~

~~3. American National Standards Institute/American Society of Civil Engineers, ANSI/ASCE.~~

~~a. Specifications for the Design and Construction of Composite Slabs and Commentary on Specifications for the Design and Construction of Composite Slabs, ANSI/ASCE 3.~~

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~~b. Specifications for the Design of Cold-Formed Stainless Steel Structural Members, ANSI/ASCE 8.~~

~~c. Guideline for Structural Condition Assessment of Existing Buildings, ANSI/ASCE 11.~~

~~4. American National Standards Institute/American Welding Society, ANSI/AWS.~~

~~a. Standard Welding Procedure and Performance Qualification, AWS B2.1.~~

~~b. Recommended Practice for Stud Welding, AWS C5.4.~~

~~c. Structural Welding Code - Steel , ANSI/AWS D1.1.~~

~~d. Structural Welding Code - Sheet Metal , AWS D1.3.~~

~~e. Structural Welding Code - Reinforcing Steel, ANSI/AWS D1.4~~

~~f. Specification for Welding of Sheet Metal , AWS D9.1.~~

~~g. Standard for Qualification of Welding Procedures and Welders for Piping and Tubing, AWS D10.9.~~

~~5. American Society for Testing and materials, ASTM.~~

~~a. Standard Specification for General Requirements for Rolled Steel Plates, Shapes, b. Sheet Piling and Bars for Structural Use, ASTM A 6.~~

~~b. Standard Specifications for High-Strength Bolts for Structural Steel Joints, ASTM A 325.~~

~~c. Standard Specification for Heat-Treated Steel Structural Bolts. 150 KSI Minimum Tensile Strength, ASTM A 490.~~

~~d. Standard Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, ASTM A 525.~~

~~6. National Association of Architectural Metal Manufacturers, NAAMM.~~

~~a. Metal Grating Manual, NAAMM.~~

~~7. Rack Manufacturers Institute/American National Standards Institute, RMI/ANSI.~~

~~a. Industrial Steel Storage Racks Manual, RMI.~~

~~b. Manual of Safety Practices - A code of Practices for the Use of Industrial and Commercial Steel Storage Racks, RMI/ANSI MH16.2.~~

~~8. Research Council on Structural Connections of the Engineering Foundation, RCSCEF.~~

~~a. Specification for Structural Joints Using ASTM A 325 or A 490 Bolts, RCSCEF.~~

~~9. Shelving Manufacturers Association, a Products Section of the Material Handling Institute/American National Standards Institute, SMA/ANSI.~~

~~a. Specification for the Design, Testing, Utilization and Application of Industrial Grade Steel Shelving , SMA/ANSI MH281.~~

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S5327 Text Modification

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~~10. Steel Deck Institute, Inc., SDI.~~

~~a. Standard Practice Details , SDI.~~

~~b. SDI Manual of Construction with Steel Deck, SDI.~~

~~c. Deck Damage and Penetrations, SDI.~~

~~d. Steel Deck Institute Design Manual.~~

~~e. LRFD Design Manual for Composite Beams and Girders with Steel Deck, SDI.~~

~~f. Diaphragm Design Manual, SDI.~~

~~11. Steel Joist Institute, SJI.~~

~~a. Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders, SJI.~~

~~b. Structural Design of Steel Joist Roofs to Resist Ponding Loads, Technical Digest No. 3, SJI.~~

~~c. Vibration of Steel Joist Concrete Slab Floors, Technical Digest No. 5 , SJI.~~

~~d. Structural Design of Steel Joist Roofs to Resist Uplift Loads, Technical Digest No. 6, SJI.~~

~~e. Welding of Open Web Steel, Technical Digest No. 8 , SJI.~~

~~f. Handling and Erection of Steel Joists and Joist Girders, Technical Digest No. 9, SJI.~~

~~g. 60 Year Steel Joist Manual, SJI.~~

~~12. Steel Structures Painting Council, SSPC.~~

~~a. Steel Joist Shop Paint, SSPC Paint 15.~~

~~b. A Guide to the Shop Painting of Structural Steel, SSPC/AISC.~~

~~13. Underwriters Laboratories, Inc., UL.~~

~~a. Test for Uplift Resistance of Roof Assemblies, UL 580.~~

~~14. Welded Steel Tube Institute, Inc., WSTI.~~

~~a. Manual of Cold Formed Welded Structural Steel Tube.~~

~~2214.4 Workmanship. Steel construction shall be in conformance with the tolerances, quality and methods of construction as set forth in Section 2214.3.~~

~~2214.5 Statements of the structural responsibilities of architects and professional engineers on the design of structural steel systems.~~

~~2214.5.1 The structural engineer of record and/or the architect of record shall be responsible for all aspects of the structural design including the design of components and connections. The structural construction documents may~~

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~~assign to the fabricator the responsibility for implementing the design as specified and for maintaining fabrication and erection tolerances and for ensuring the fit and erectability of the structure.~~

~~2214.5.2 The structural engineer of record and/or the architect of record may elect to detail all connections on the structural construction documents and require fabrication in accordance with those details.~~

~~2214.5.3 Alternately the structural engineer of record and/or the architect of record may permit the fabricator to select or modify connections subject to review and approval by the structural engineer of record and/or the architect of record. In that case, the structural construction documents shall specify criteria for the design of connections and shall identify the nature, magnitude and location of all design loads.~~

~~2214.5.4 The structural engineer of record and/or the architect of record shall require the submission of fabrication and erection drawings for review as an indication that his or her intent has been understood and the specified criteria have been used.~~

~~2214.5.5 Structural submittals requiring engineering input, such as dealing with substitute connections, shall be accompanied by design calculations and shall bear the impressed seal, signature and date of the specialty engineer who prepared them.~~

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FL Building Code Proposal

B. Manley, AISI

Section 2214

Reason Statement:

The deletion of Section 2214.1 is recommended because the language is not related to structural wind resistance design and it is already covered in model base code through reference standards that require the use of rational analysis in accordance with established principles and methods.

Modifications to the new Section 2214.1 reflect the fact that the terminology "light gauge steel" is not used in either Section 2222 or 2223. The additional language "in high-velocity hurricane zones" clarifies that these sections are only applicable to buildings and structures in these specific areas of Florida.

For the purposes of this code change, it has been assumed that the HVHZ provisions should be wind related and work in addition to the provisions of the model base code, so standards that are adopted directly or indirectly in the base model code do not need to be re-adopted in this section. Additionally, there are a number of documents that are not written in mandatory language -- they are not intended or appropriate for direct code adoption. Finally there are a number of documents that are outdated or no longer maintained by the industry. Consequently, it is recommended that the following documents be deleted for the indicated reasons:

1.(a) -- Document is covered in model base code. (Already recommended for deletion in proposed FL Supplement)
1.(b) through 1.(f) -- These documents are not written in standard /mandatory language and are not specifically related to structural wind resistance design. Additionally, the editions are outdated and could lead to potential conflicts with the model base code.
2.(a) through 2.(d) – These documents are not related to structural wind resistance design and contain fire/life safety requirements. (Already recommended for deletion in proposed FL Supplement)
2.(e) -- This document is not written in standard/mandatory language and is not specifically related to structural wind resistance design.
2.(f) and 2.(g) -- These documents are no longer maintained by AISI and are not specifically related to structural wind resistance design.
2.(h) – Document is not related to structural wind resistance design and contains fire/life safety requirements. (Already recommended for deletion in proposed FL Supplement)
2.(i) -- This document is not written in standard language and is not specifically related to structural wind resistance design.
3.(a) -- This document is no longer maintained by ASCE and is not specifically related to structural wind resistance design.
3.(b) – Document is not related to structural wind resistance design and is already adopted in the model base code.
3.(c) -- Document is not related to structural wind resistance design. (Already recommended for deletion in proposed FL Supplement)

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Date Submitted	7/24/2012	**Section**	2215	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

This proposal, submitted on behalf of the steel industry, updates Section 2215.

Rationale

Sections 2215.1, 2215.2, and 2215.4 are recommended for deletion in the proposed FL Supplement because they are already covered in the model base code.
Section 2215.5 is recommended for deletion because ribbed bolts, also known as interface body bolts, are no longer in production. Requirements for bolts are sufficiently covered in the model base code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5366 Text Modification

Page: 1

SECTION 2215

HIGH-VELOCITY HURRICANE ZONES—MATERIAL

~~**2215.1 Steel.** Steel shall conform to the physical requirements set forth in the applicable standard in Section 2214.3.~~

~~**2215.2 High-strength steel bolts.** High-strength steel bolts shall conform to the requirements set forth in the applicable standards of Section 2214.3.~~

2215.1~~3~~ Used and damaged material. All steel shall be straight and true, and any section damaged to be out of shape shall not be used. Steel previously used or fabricated for use or fabricated in error shall not be used except with the approval of the building official. Filled holes or welds shall not be concealed. Straightened or retempered fire-burned steel shall not be used except with the approval of the building official.

~~**2215.4 Tests.** The building official may require tests and/or mill records to determine the quality of materials.~~

~~**2215.5 Ribbed bolts.** Ribbed bolts shall be made from carbon-manganese steel with a minimum tensile strength of 70,000 per square inch (482.7 MPa).~~

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Date Submitted	7/24/2012	**Section**	2217	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Mod #5327, Section 2214.

Summary of Modification

This proposal, submitted on behalf of the steel industry, corrects a section reference based upon changes recommended in a proposal for Section 2214.

Rationale

The industry proposal submitted on Section 2214 recommends the deletion of the reference standard section in Section 2214.3. This proposal works in concert with that proposal by amending the reference to Section 2214.3 to Chapter 22, the base model code chapter. This then includes all applicable steel standards adopted in Chapter 22.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

SECTION 2217

HIGH-VELOCITY HURRICANE ZONES— MINIMUM THICKNESS OF MATERIAL

2217.1 The minimum thickness of material shall not be less than as set forth in the applicable standards listed in Chapter 22~~Section 2214.3~~ except as otherwise set forth herein.

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Date Submitted	7/24/2012	**Section**	2221.1	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Mod #5327, Section 2214

Summary of Modification

This proposal, submitted on behalf of the steel industry, corrects a section reference based upon changes recommended in a proposal for Section 2214.

Rationale

The industry proposal submitted on Section 2214 recommends the deletion of the reference standard section in Section 2214.3. This proposal works in concert with that proposal by amending the reference to Section 2214.3 to Section 2207, the base model code section on open web steel joists

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5379 Text Modification

2221.1 Standards. Open web steel joists shall comply with the standards set forth in Section 2207~~Section 2214.3~~.

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S5470

Date Submitted	7/24/2012	**Section**	2221.6.2	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	Yes				

Related Modifications

Summary of Modification

This proposal, submitted on behalf of the steel industry, corrects the requirements on end support and anchorage of steel joists.

Rationale

The language recommended for deletion is confusing and incorrect. Specifically, the language “in any direction” is open to interpretation. And, more importantly, SJI doesn’t publish rated end reactions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5470-A1

Proponent Jaime Gascon **Submitted** 9/21/2012 **Attachments** Yes Gascon

Text of Modification

2221.6.2 The ends of every joist shall be bolted, welded or encased in concrete at each point of bearing to provide not less resistance ~~in any direction than 50 percent of the Steel Joist Institute (SJI) rated end reaction horizontally and~~ than 100 percent of the net ~~uplift~~ reactions specified in the structural construction documents.

Rationale

Since there are other loads that act in this connection, the language should be cleared up by deleting the word “uplift” in the language that remains and make “reaction” plural. See alternative in red.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Updates the code and makes it clearer.

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

None. Updates the code and makes it clearer.

Impact to industry relative to the cost of compliance with code

None. Updates the code and makes it clearer.

Requirements

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

Updates the code and makes it clearer.

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

Updates the code and makes it clearer.

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

Does not discriminate. The alternative suggestion updates the code and makes it clearer.

Does not degrade the effectiveness of the code

Effectiveness is improved since it updates the code and makes it clearer.

2221.6.2 The ends of every joist shall be bolted, welded or encased in concrete at each point of bearing to provide not less resistance ~~in any direction than 50 percent of the Steel Joist Institute (SJI) rated end reaction horizontally and~~ than 100 percent of the net uplift reaction specified in the structural construction documents.

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S5470 -A1 Text Modification

2221.6.2 The ends of every joist shall be bolted, welded or encased in concrete at each point of bearing to provide not less resistance ~~in any direction than 50 percent of the Steel Joist Institute (SJI) rated end reaction horizontally and~~ than 100 percent of the net ~~uplift~~ reactions specified in the structural construction documents.

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Date Submitted	7/24/2012	**Section**	2221.6.3	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Mod. #5327, IBC Section 2214

Summary of Modification

This proposal, submitted on behalf of the steel industry, corrects a section reference based upon changes recommended in an alternate proposal for Section 2214.

Rationale

The industry proposal submitted on Section 2214 recommends the deletion of the reference standard section in Section 2214.3. This proposal works in concert with that proposal by amending the reference to Section 2214.3 to Section 2207, the base model code section on open web steel joists.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5383 Text Modification

2221.6.3 The ends of joists shall have a minimum bearing, on reinforced concrete and steel supports as specified in the standards set forth in Section ~~2214.3(11)~~2207.

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Date Submitted	7/24/2012	**Section**	2222.1	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Mod. #5327, Section 2214

Summary of Modification

This proposal, submitted on behalf of the steel industry, corrects a section reference based upon changes recommended in an proposal for Section 2214.

Rationale

The industry proposal submitted on Section 2214 recommends the deletion of the reference standard section in Section 2214.3. This proposal works in concert with that proposal by amending the reference to Section 2214.3 to Section 2210, the cold-formed steel (CFS) construction section. This then includes all appropriate CFS standards adopted in Chapter 22.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5461 Text Modification

2222.1 Cold-formed steel construction shall include individual structural members, structural decks or wall panels, and nonstructural roofing, siding and other construction elements formed from sheet or strip steel and as set forth in Section 2210~~2214.3(2).~~

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S5462

Date Submitted	7/24/2012	**Section**	2222.2	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Mod. #5327, Section 2214
Mod. #5461, Section 2222.1

Summary of Modification

This proposal, submitted on behalf of the steel industry, recommends deletion of Section 2222.2.

Rationale

Section 2222.2 and 2222.2.1 are recommended for deletion because these topics are adequately handled by the model base code – they are not related to structural wind resistance design. Additionally, the references to Section 2214.3 are no longer valid, since that section has been recommended for deletion in another industry proposal.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5462 Text Modification

Page: 1

~~**2222.2 Standards.** Cold-formed steel used in structural applications shall conform to the Standards set forth in Section 2214.3(2).~~

~~**2222.2.1** Galvanizing as referred to herein is to be zinc coating conforming to the standard set forth in Section 2214.3(5)(d).~~

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Date Submitted	7/30/2012	**Section**	2222.4.4	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Mod #5643, Section 1616.3

Summary of Modification

This proposal, submitted on behalf of the steel industry, coordinates with the Chapter 16 changes recommended in Mod. 5643 by removing a redundant requirement in Chapter 22.

Rationale

Mod #5643, Section 1616.3, recommends the addition of four new deflection limits for metal sheets. If that proposal is approved, the deflection limit given in Section 2222.4.4 should be deleted, since it would be redundant.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5644-G1

Proponent Jaime Gascon **Submitted** 9/21/2012 **Attachments** Yes

Comment:

Excessive wind storm generated water infiltration can have disastrous effects on buildings, therefore it is suggested that the existing HVHZ deflection criteria remain in place until further studies can be performed. See attached file.

~~2222.4.4~~ ~~Deflection of metal siding and roof panels shall not exceed L/240.~~

S5644 Text Modification
Page: 1
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S5644 -G1 General Comment

Page: 1

PROPOSED HVHZ ALLOWABLE DEFLECTION CHANGES TO METAL ROOFING AND WALL CONSTRUCTION

Structural metal roof panels in the HVHZ have been required to follow TAS110 section 15 since 1994. The protocol establishes testing structural panels to the requirements in TAS125, where slopes less than 2:12 are required to meet TAS114 Appendix G (Same procedure and test as in FM 4471 Appendix G). The roof water test criteria required in these standards is incompatible with the proposed delection criteria of L/60 and may provide erronoeus results when the actual delections during wind/rain events are multiples of that allowable by the test protocol.

The proposed metal wall panel deflection limit of L/90 can also provide unacceptable water infiltraftion performance by allowing excessive panel joint separation. The wall panel deflections will further be increased by the proposed increase in delection limits of the sub framing supporting the wall panels.

The recommendations of the NIST windstorm and coastal inundation failure study sited below clearly deliniates the need for further research. In addition to the NIST work, the Wall of Wind facility at Florida International University has the capability to perform large scale wind/rain simulations that can optimize roof and wall defelction criteria to reduce structural failure and water infiltration to acceptable levels. This reaserch will confirm or correctly modify existing HVHZ protocols to provide load and water infiltration requirements that are safe and adequately protect the public.

Excessive wind storm generated water infiltration can have disaterous effects on buildings, therefore it is suggested that the existing HVHZ deflection criteria remain in place until the NIST/FIU recommended studies can be performed.

National Institite of Standards and Technology (NIST) report TN 1476 – Performance of Physical Structures in Hurricane Katrina and Hurricane Rita: A Reconnaissance Report.

Recommendation 14. **Develop and implement special inspection requirements for connection and cladding attachments in pre-engineered metal buildings within model codes for hurricane prone regions.**
The NIST-led reconnaissance observed a considerable amount of damage to engineered metal buildings throughout the region affected by Hurricane Katrina and Rita. In many cases damage consisted of cladding that had been removed from the building due to wind pressure and in other cases, damage to the structural members was observed. The Structural Engineers Association of Washington (SEAW) submitted a code change proposal in March 2006 to the International Code Council to add special inspection requirements for pre-engineered metal buildings located in hurricane-prone regions to the IBC.
Affected Codes: International Building Code, NFPA 5000.
Primary Interested Government Entities: NIST. Interested Entities: ICC, NFPA.
(Florida reserves all of these provisions in chapter 17 of the FBC.)

Recommendation 16. **Conduct detailed studies to identify mechanisms for water ingress into buildings during hurricanes and to develop improved building envelope construction and cladding systems that are resistant to water ingress.**
Many buildings in the areas affected by Hurricanes Katrina and Rita, including critical hospital facilities, sustained little or no structural damage but had significant water ingress due to penetration of wind-driven

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rain around windows, through walls, damaged roofs, or displaced ductwork or equipment on roofs. Water ingress often led to complete shut down and loss of operation of the building for an extended period of time. Specific vulnerabilities identified in the Orange, Beaumont, Gulfport, Biloxi and Port Arthur areas are permeability of masonry cladding, weather tightness of hurricane-rated windows, and susceptibility of roof-mounted ductwork and vent covers to damage. A detailed performance assessment on the integrity of the envelope of major buildings is recommended to identify strategies to mitigate water ingress into buildings and dwellings during hurricanes.
Research in this area should be focused on providing guidance on the design, selection, and installation of cladding that considers the risk from wind-driven rain. Research should also consider accessibility requirements as specified by Fair Housing Act, Americans with Disabilities Act, and Section 504 of the Rehabilitation Act as appropriate. Results should be implemented in U.S. model building codes, ASCE and ASTM engineering standards. *Affected Standards: ASTM E-96; Affected Codes: International Building Code; International Residential Code; NFPA 5000.*
Primary Interested Government Entities: DOE. Interested Entities: HUD, FEMA, ASCE, ASTM, ICC, NFPA, and state and local building authorities.

Recommendation 20. **Conduct detailed studies of the performance of metal buildings subjected to hurricane force winds to fully understand and document the factors that contributed to their performance and make recommendations for improvements to future designs.**
A large number of steel buildings were affected by Hurricanes Katrina and Rita. These buildings exhibited a wide range of performance from minimal damage to significant damage to the cladding and/or the structure as a result of wind and impact of wind-borne debris. The construction of steel buildings and components is often proprietary and uses standard details and rules of thumb that have worked successfully in the past. Further study is recommended to investigate the connection details present in the buildings that did not collapse and to establish the ultimate strength of buildings relative to wind loading, taking into account wind directionality and the dynamical, stochastic nature of the load.
Primary Interested Government Entities: NIST. Interested Entity: Metal Building Manufacturers Association (MBMA)

For copy of the full report, see: http://www.nist.gov/el/disasterstudies/weather/katrina_and_rita.cfm

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Date Submitted	7/24/2012	**Section**	2222.4	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Mod. #5327, Section 2214

Summary of Modification

This proposal, submitted on behalf of the steel industry, corrects a reference based upon changes recommended in a proposal for Section 2214.

Rationale

The industry proposal submitted on Section 2214 recommends the deletion of the reference to the Diaphragm Design Manual because it is not written in standard/mandatory language and is not specifically related to structural wind resistance design. Rather, it is included by reference in the SDI standards adopted in the model base code. Instead, it is appropriate to directly reference the SDI standards in Section 2210.1.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5464 Text Modification

2222.4 Structural sheets. Decks and panels with or without an approved fill material may be designed as diaphragms in accordance with Section 2210.1~~Diaphragm Design Manual of the Steel Deck Institute~~, provided other limitations in this code are complied with.

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Date Submitted	7/24/2012	**Section**	2222.6.1	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No

General Comments No

Alternate Language No

Related Modifications

Mod. #5327, Section 2214

Summary of Modification

This proposal, submitted on behalf of the steel industry, corrects a reference section based upon changes recommended in a proposal for Section 2214.

Rationale

The industry proposal submitted on Section 2214 recommends the deletion of the reference standard section in Section 2214.3. This proposal works in concert with that proposal by amending the reference to Section 2214.3 to Section 2210, the cold-formed steel (CFS) section. This then includes the appropriate CFS standards adopted in Chapter 22.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5466 Text Modification

2222.6.1 All steel sheets having a thickness of less than 20 gauge, i.e., materials of higher gauge, shall be galvanized in accordance with the standards of Section 2210~~Section 2214.3(5)(d) herein~~ to provide a minimum coating designation of G90.

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Date Submitted	7/24/2012	**Section**	2222.7	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Mod. #5327, Section 2214

Summary of Modification

This proposal, submitted on behalf of the steel industry, deletes a section reference based upon changes recommended in an proposal for Section 2214.

Rationale

Building on the recommended deletion of 2218.2 and 2218.3 from the FL Supplement, this proposal strikes the reference to 2214.3. The topic of welding is fully covered in the model base code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

~~**2222.7** Welding shall conform to the requirements of Sections 2214.3, 2218.2 and 2218.3~~.

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S5471

Date Submitted	7/24/2012	**Section**	2223.2	**Proponent**	Bonnie Manley
Chapter	22	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Mod. #5327, Section 2214

Summary of Modification

This proposal, submitted on behalf of the steel industry, corrects a section reference based upon changes recommended in an proposal for Section 2214.

Rationale

The industry proposal submitted on Section 2214 recommends the deletion of the reference standard section in Section 2214.3. This proposal works in concert with that proposal by amending the reference to Section 2214.3 to Chapter 22, the base model code chapter. This then includes all applicable steel standards adopted in Chapter 22.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

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

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

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

Yes, it does.

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

Yes, it does.

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

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2223.2 Standards. Frames and components shall comply with the standards set forth in Chapter 22~~Section 2214.3~~.

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Date Submitted	7/5/2012	**Section**	2301.1	**Proponent**	Michael Goolsby
Chapter	23	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section Formatting

Rationale

Legislative mandate resulted in deletion of non-wind related provisions of Chapter 23 HVHZ, making necessary the utilization of base code elements related to definitions, minimum standards and quality, preservative treated wood, fire-retardant wood, protection against termite and decay, and building site preparation provisions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Code provisions are now found in the base code, formatting only.

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

None. Code provisions are now found in the base code, formatting only.

Impact to industry relative to the cost of compliance with code

None. Code provisions are now found in the base code, formatting only.

Requirements

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

This modification provides guidance to the applicable sections of the base code related to definitions, minimum standards and quality, preservative treated wood, fire-retardant wood, protection against termite and decay, and building site preparation provisions.

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

This modification provides guidance to the applicable sections of the base code related to definitions, minimum standards and quality, preservative treated wood, fire-retardant wood, protection against termite and decay, and building site preparation provisions.

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

This modification provides guidance to the applicable sections of the base code related to definitions, minimum standards and quality, preservative treated wood, fire-retardant wood, protection against termite and decay, and building site preparation provisions.

Does not degrade the effectiveness of the code

This modification provides guidance to the applicable sections of the base code related to definitions, minimum standards and quality, preservative treated wood, fire-retardant wood, protection against termite and decay, and building site preparation provisions.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4945 Text Modification

2301.1 Scope. The provisions of this chapter shall govern the materials, design, construction and quality of wood members and their fasteners.

Exception: Buildings and structures located within the high-velocity hurricane zone shall comply with the provisions of Sections 2302, 2303.1 through 2303.1.4, 2303.1.8, 2303.2, 2304.11, 2304.13 and Sections 2314 through 2330.

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Date Submitted	7/24/2012	**Section**	2304.3.4	**Proponent**	T Stafford
Chapter	23	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Reinstates requirements that gable endwalls be structurally continuous between points of lateral support. This language currently exists in the 2010 FBCB.

Rationale

This language is currently contained in the 2010 FBC. No new requirements are being proposed. This proposal reinstates provisions for concrete gable end walls. Section 2114 specifically addresses gable end walls. This language has actually existed in the Florida Building Code since the first edition (2001). During the development of the 2001 FBC, a newspage article highlighted some deficiencies throughout the state with regard to the design of gable end walls. The Structural TAC crafted this language to address these deficiencies. The language clarifies that if the gable end wall is not structural continuous from the floor to the roof, bracing of the discontinuity is required.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5622 Text Modification

Page: 1

2304.3.4 Gable endwalls.

2304.3.4.1 General. Gable endwalls shall be structurally continuous between points of lateral support.

2304.3.4.2 Cathedral endwalls. Gable endwalls adjacent to cathedral ceilings shall be structurally continuous from the uppermost floor to the ceiling diaphragm or to the roof diaphragm.

2304.3.4.3 Full height studs. Full height studs may be sized using the bracing at a ceiling diaphragm for determining stud length requirements.

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Date Submitted	7/26/2012	**Section**	2304.7.2.1	**Proponent**	T Stafford
Chapter	23	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Requires the use of ring shank nails for roof decking attachment. This language will achieve consistency between the FBCB and FBCR. The FBCR has required the roof decking to be attached with ring shank nails since the 2006 Supplement to the 2004 code.

Rationale

This proposal achieves consistency with the 2010 FBCR by requiring ring shank nails for attaching the roof deck. As is widely known, the roof is one of the most vulnerable parts of a building. Keeping the roof decking on the building when subjected to hurricane force winds is key to successful performance of the building. Using ring shank nails for attaching the roof decking results in a minimal to negligible increase in cost which provides an extremely generous benefit/cost ratio. The requirements are based on hundreds of true wood structural panel tests. Extensive roof sheathing fastening tests at Clemson University (Reinhold 2000 – 2002, McKinley 2001) and at the International Hurricane Center – Florida International University (Reinhold, Alvarez 2003) compared the Mean Failure Pressure in psf for roof sheathing panels using both the 8d common and the 8d ring shank nails spaced at 6 inches as prescribed by the code. Sheathing consisted of 5/8 inch thick plywood attached to nominal 2x4 Southern Yellow Pine rafters.

The results of these tests were as follows:

(1) Mean ultimate uplift capacity for panels attached with 8d common nails at 6 inch spacing: 126 pounds per square foot
(2) Mean ultimate uplift capacity for panels attached with 8d ring shank nails at 6 inch spacing: 292 pounds per square foot

This shows a 131% improvement in performance when 8d ring shank nails are used instead of the currently prescribed 8d common nails.

Requiring the use of 8d ring shank nails would result in an almost negligible increase in cost. It's estimated that the cost increase will be less than $10 for 2000 square foot roof.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This proposal will have no impact to local entities regarding enforcement of the code as the 2010 FBCR currently contains this requirement.

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

The cost impact to building and property owners will be minimal to negligible as the cost increase will be less than $10 for a 2000 squre foot roof.

Impact to industry relative to the cost of compliance with code

The cost impact to industry will be minimal to negligible as the cost increase will be less than $10 for a 2000 squre foot roof.

Requirements

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

This requirement will strengthen the code which will improve the performance of buildings impacted by hurricanes.

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

The requirement will strengthen the code.

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

This requirement will not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

This requirement will not degrade the effectiveness of the code.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5671-G1

Proponent Paul Coats **Submitted** 9/23/2012 **Attachments** No

Comment:

The American Wood Council is opposed to this change for the following reasons: 1) the specified nail is not well standardized in ASTM F1667 and so capacities could vary widely; 2) mandating one prescriptive nail for all cases will make engineering design very difficult since it uses a prescriptive solution with a nonstandard fastener; and 3) the type of steel and whether the nail is galvanized or not will significantly affect its capacity; and 4) the effect on lateral load values for roof diaphragm capacities is uncertain.

S5671 Text Modification

Page: 1

TABLE 2304.9.1
FASTENING SCHEDULE

CONNECTION	FASTENINGa, m	LOCATION
31. Wood structural panels and particleboardb Subfloor, roof and wall sheathing (to framing) Wood structural panel roof sheathing shall be fastened in accordance with Section 2304.7.2.1	(no change to remainder of table)	

2304.7.2.1 Wood structural panel roof sheathing attachment. Wood structural panels used as roof sheathing shall be installed with joints staggered and fastened in accordance with Section 2304.7.2.1.1.

2304.7.2.1.1 Sheathing fastenings. Wood structural panel sheathing shall be fastened to roof framing with 8d annular ring-shank nails at 6 inches on center at edges and 6 inches on center at intermediate framing. Ring-shank nails shall have the following minimum dimensions:

1. 0.113 inch nominal shank diameter
2. Ring diameter of 0.012 over shank diameter
3. 16 to 20 rings per inch
4. 0.280 inch full round head diameter
5. 2 inch nail length

Where roof framing with a specific gravity, 0.42 = G < 0.49 is used, spacing of ring-shank fasteners shall be 4 inches on center in nailing zone 3 in accordance with Figure 2304.7.2.1.1 where V_{ult} is 130 mph or greater.

Exceptions:

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1. Where roof framing with a specific gravity, 0.42 = G < 0.49 is used, spacing of ring-shank fasteners shall be permitted at 12 inches on center at intermediate framing in nailing zone 1 for any V_{ult} and in nailing zone 2 for V_{ult} less than or equal to 140 mph in accordance with Figure 2304.7.2.1.1.

2. Where roof framing with a specific gravity, G = 0.49 is used, spacing of ring-shank fasteners shall be permitted at 12 inches on center at intermediate framing in nailing zone 1 for any V_{ult} and in nailing zone 2 for V_{ult} less than or equal to 150 mph in accordance with Figure 2304.7.2.1.1.

3. Where roof framing with a specific gravity, G = 0.49 is used, 8d common or 8d hot dipped galvanized box nails at 6 inches on center at edges and 6 inches on center at intermediate framing shall be permitted for V_{ult} less than or equal to 120 mph in accordance with Figure 2304.7.2.1.1.

4. Where roof diaphragm requirements necessitate a closer fastener spacing.

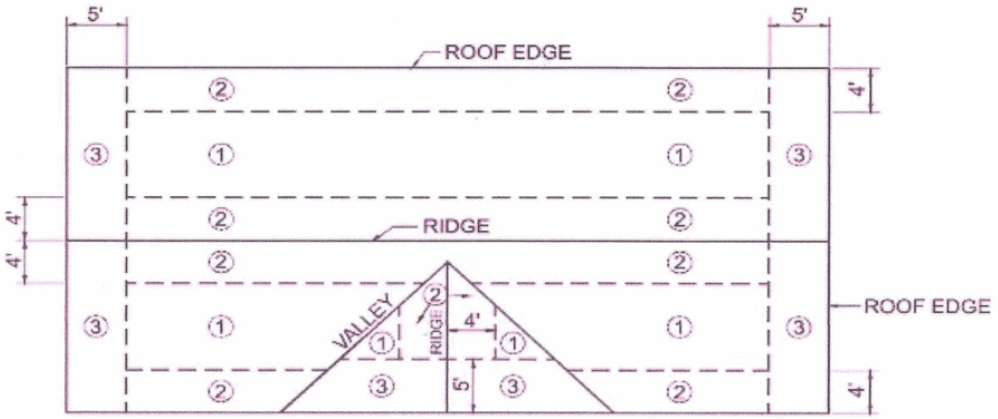


FIGURE 2304.7.2.1.1 ROOF SHEATHING NAILING ZONES

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Date Submitted	7/25/2012	**Section**	2308.2	**Proponent**	T Stafford
Chapter	23	**Affects HVHZ**	No	**Attachments**	No

General Comments No

Alternate Language No

Related Modifications

Summary of Modification

This proposal reinstates the limit on using conventional wood frame construction to areas where the Vult wind speed equals or exceeds 115 mph.

Rationale

This language is currently contained in the 2010 FBC. No new requirements are being proposed. This proposal reinstates the threshold for using conventional wood frame construction that is contained in the 2010 FBCB. By setting the limit at Vult of 115 mph, this ensures that all wood-framed buildngs in the State of Florida are either designed for the appropriate wind loads, or are built to one of the prescriptive standards for high wind regions such as ICC 600 or the WFCM. History has proven that in hurricane prone regions such as Florida, wood-framed buildings without special consideration of load path issues perform very poorly when subjected to hurricanes. This proposal maintains the limit established for the 2010 FBCB and essentially carries forward the limit that has been established for the State of Florida since the inception of the Florida Building Codes. With regard to the changes propsed in Section 2308.2.1, the 2012 WFCM has been updated to be consistent with the strength design-level wind speeds specified by ASCE 7-10. Therefore, the wind speeds in Figures 1609A, B, or C do not have to be converted to use the WFCM.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2308.2 Limitations. Buildings are permitted to be constructed in accordance with the provisions of conventional light-frame construction, subject to the following limitations, and to further limitations of Sections 2308.11 and 2308.12.

1. -3 no change

4. Ultimate Design Wind Speeds, V_{ult} ~~V_{asd} as determined in accordance with Section 1609.3.1~~ shall not exceed 115 ~~100~~ miles per hour (mph) (44 m/s) (3-second gust).

~~**Exception:** Vasd as determined in accordance with Section 1609.3.1 shall not exceed 110 mph (48.4 m/s) (3-second gust) for buildings in Exposure Category B that are not located in a hurricane prone region.~~

2308.2.1 Ultimate ~~Nominal~~ design wind speed greater than 115 ~~100~~ mph (3-second gust).
Where the Ultimate Design Wind Speed, Vult ~~Vasd as determined in accordance with Section 1609.3.1~~ exceeds 115 ~~100~~ mph (3-second gust), the provisions of either AF&PA WFCM or ICC 600 are permitted to be used. Wind speeds in Figures 1609A, 1609B, and 1609C shall be converted in accordance with Section 1609.3.1 for use with ~~AF&PA WFCM or~~ ICC 600.

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S4946

Date Submitted	7/5/2012	**Section**	2325.1	**Proponent**	Michael Goolsby
Chapter	23	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section Formatting

Rationale

Legislative mandate resulted in deletion of non-wind related provisions of Chapter 23 HVHZ, making necessary the deletion of references to code sections which no longer exist.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Deletes a code section which no longer exists, formatting only.

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

None. Deletes a code section which no longer exists, formatting only.

Impact to industry relative to the cost of compliance with code

None. Deletes a code section which no longer exists, formatting only.

Requirements

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

N/A. Deletes a code section which no longer exists, formatting only.

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

N/A. Deletes a code section which no longer exists, formatting only.

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

N/A. Deletes a code section which no longer exists, formatting only.

Does not degrade the effectiveness of the code

N/A. Deletes a code section which no longer exists, formatting only.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4946 Text Modification

2325.1 Wood shall not support masonry or concrete except as permitted in Sections 2325.2 ~~and 2325.3~~.

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S5025

Date Submitted	7/9/2012	**Section**	2401.1	**Proponent**	Michael Goolsby
Chapter	24	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

Legislative mandate resulted in the deletion of non-wind related provisions of Chapter 24 HVHZ, making necessary the utilization of base code elements. This modification clarifies that the entire chapter, including those remaining HVHZ, are applicable. This change clarifies that these base code provisions also apply in the HVHZ, with the single noted exception.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Base code provisions are now applicable, formatting only.

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

None. Base code provisions are now applicable, formatting only.

Impact to industry relative to the cost of compliance with code

None. Base code provisions are now applicable, formatting only.

Requirements

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

This modification provides guidance to the applicable sections of Chapter 24 for the proper design and installation of glass and glazing.

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

This modification provides guidance to the applicable sections of Chapter 24 for the proper design and installation of glass and glazing.

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

This modification provides guidance to the applicable sections of Chapter 24 for the proper design and installation of glass and glazing.

Does not degrade the effectiveness of the code

This modification provides guidance to the applicable sections of Chapter 24 for the proper design and installation of glass and glazing.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2401.1 Scope.

The provisions of this chapter shall govern the materials, design, construction and quality of glass, light transmitting ceramic and light-transmitting plastic panels for exterior and interior use in both vertical and sloped applications in buildings and structures.

Exception: Buildings and structures located within the high-velocity hurricane zone shall also comply with the provisions of Sections 2410 through 2415, excluding 2405.5.

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Date Submitted	7/30/2012	**Section**	2403.1	**Proponent**	Jim Heise
Chapter	24	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section 2403.1 Identification is revised to read as follows:

Rationale

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.
Continues improved efficiency in enforcing the code.

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

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

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

Helps protect the health and welfare of the public by having products tested and labeled to these standards.

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

This will improve the code by reinstating these standards that exist in the Florida Code with the current edition.

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2403.1 Identification. Each pane shall bear the manufacturer's mark designating the type and thickness of the glass or glazing material. With the exception of tempered glazing materials or laminated materials, ~~T~~the identification shall not be omitted unless approved and an affidavit is furnished by the glazing contractor certifying that each light is glazed in accordance with approved construction documents that comply with the provisions of this chapter. Safety glazing shall be identified in accordance with Section 2406.2. Each pane of tempered glass, except tempered spandrel glass, shall be permanently identified by the manufacturer and each pane of laminated glass shall be permanently identified with the laminator, overall glass thickness and trade name of interlayer. The identification mark shall be acid etched, sand blasted, ceramic fired, laser etched, embossed or of a type that, once applied, cannot be removed without being destroyed. Tempered or laminated spandrel glass shall be provided with a removable paper marking by the manufacturer.

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S5026

Date Submitted	7/9/2012	**Section**	2404.1	**Proponent**	Michael Goolsby
Chapter	24	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section Formatting

Rationale

Legislative mandate resulted in deletion of non-wind related provisions of Chapter 24 HVHZ. With the elimination of Chapter 24 HVHZ sections and the utilization of base code sections formatting of certain base code sections becomes necessary. Where Chapter 24 sections give direction to non-Chapter 24 sections, those sections must be modified to also contain direction to the equivalent Chapter 16 HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Provides direction to applicable HVHZ sections. Formatting only.

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

None. Provides direction to applicable HVHZ sections. Formatting only.

Impact to industry relative to the cost of compliance with code

None. Provides direction to applicable HVHZ sections. Formatting only.

Requirements

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary guidance applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2404.1 Vertical glass.

Glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609 (HVHZ shall follow Section 1620) for components and cladding. Glass in glazed curtain walls, glazed storefronts and glazed partitions shall meet the seismic requirements of ASCE 7, Section 13.5.9. The load resistance of glass under uniform load shall be determined in accordance with ASTM E 1300.

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Date Submitted	7/24/2012	**Section**	2404.2, 2405.5, 2405.5.1, 2405.5.2	**Proponent**	Dwight Wilkes
Chapter	24	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

5633, 5635

Summary of Modification

Reason: The overall intent of this proposal is to clarify the requirements for tubular daylighting devices, within the context of skylights and sloped glazing.

Rationale

Reason: The overall intent of this proposal is to clarify the requirements for tubular daylighting devices, within the context of skylights and sloped glazing.

Tubular daylighting devices are a type of skylights, just as unit skylights and clarifies that, like unit skylights, TDDs are a type of skylight. This change would also bring consistency to the definition of skylights and sloped glazing.

This is the first of three modifications, second to chapter 17 and third to chapter 24.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions will be part of the Florida Base Code Code and adds clarity to the requirements for tubular daylighting devices within the context of skylights and sloped glazing.

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

The code change proposal will not increase the cost of construction.

Impact to industry relative to the cost of compliance with code

The code change proposal will not increase the cost of construction.

Requirements

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

Helps protect the health and welfare of the public by having the wind provisions for these products

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

These changes bring clarity to the code that these products are tested and labeled.

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

These modifications do not discriminate as it allows the use of any product that shows proof of meeting the code established standards.

Does not degrade the effectiveness of the code

The overall intent of this proposal is to clarify the requirements for tubular daylighting devices, within the context of skylights and sloped glazing.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

S5636 Text Modification

Page: 1

SECTION 202

DEFINITIONS

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

Revise as follows:

1710.6 Skylights and sloped glazing. ~~Unit skylights and tubular daylighting devices (TDDs) shall comply with the requirements of Section 2405. All other~~ Skylights and sloped glazing shall comply with the requirements of Chapter 24.

Revise as follows:

2404.2 Sloped glass. Glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunrooms, sloped roofs and other exterior applications shall be designed to resist the most critical of the following combinations of loads.

Exception: The design pressure rating of unit skylights and tubular daylighting devices shall be ~~designed~~ determined in accordance with Section 2405.5.

(Portions of section not shown remain unchanged)

2405.5 Unit skylights and tubular daylighting devices. Unit skylights and tubular devices shall be tested and labeled as complying with AAMA/WDMA/CSA 101/I.S./A440. The label shall state the name of the manufacturer, the approved labeling agency, the product designation and the performance grade rating as specified in AAMA/WDMA/CSA 101/I.S.2/A440. If the product manufacturer has chosen to have the performance grade of the skylight rated separately for positive and negative design pressure, then the labelshall state both performance grade ratings as specified in AAMA/ WDMA/CSA 101/I.S.2/A440 and the skylight shall comply with Section 2405.5.2. If the skylight is not rated separately for positive and negative pressure, then the performance grade rating shown on the label shall be the performance grade rating determined in accordance with AAMA/WDMA/ CSA 101/I.S.2/A440 for both positive and negative design pressure and the skylight shall conform to Section 2405.5.1.

2405.5.1 ~~Unit~~ Skylights rated for the same performance grade for both positive and negative design pressure. The design of ~~unit~~ skylights shall be based on the following equation:

Fg= PG **(Equation 24-13)**

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where:

F_g= Maximum load on the skylight determined from Equations 24-2 through 24-4 in Section 2404.2.

F = Maximum load on the skylight determined

PG= Performance grade rating of the skylight.

2405.5.2 ~~Unit~~ Skylights rated for separate performance grades for positive and negative design pressure. The design of ~~unit~~ skylights rated for performance grade for both positive and negative design pressures shall be based on the following equations:

Fgi=
PGPo
(Equation 24-14)

Fgo= PGNe

(Equation 24-15)

where:

PGPos= Performance grade rating of the skylight under positive design pressure;

PGNeg = Performance grade rating of the skylight under negative design pressure; and

Fgiand Fgoare determined in accordance with the following:

For Wo= D,

where:

W_o = Outward wind force, psf (kN/m2) as calculated in Section 1609.

D= The dead weight of the glazing, psf (kN/m2) as determined in Section 2404.2 for glass, or by the weight of the plastic, psf (kN/m^2) for plastic glazing.

Fgi= Maximum load on the skylight determined from Equations 24-3 and 24-4 in Section 2404.2.

Fgo = Maximum load on the skylight determined from Equation 24-2.

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For Wo< D,

where:

Wo= Is the outward wind force, psf (kN/m^2) as calculated in Section 1609.

D= The dead weight of the glazing, psf (kN/m2) as determined in Section 2404.2 for glass, or by the weight of the plastic for plastic glazing.

Fgi= Maximum load on the skylight determined from Equations 24-2 through 24-4 in Section 2404.2.

Fgo = 0.

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Revise as follows:

1710.6 Skylights and sloped glazing. ~~Unitskylightsand tubular daylighting devices(TDDs)shall comply with the requirementsof Section2405.Allother~~ Skylights and sloped glazing shall comply with the requirements of Chapter 24.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5636_Text_S176-12 Section 1710.6 Unit Skylights and TDD ICC Report of Public

Revise as follows:

2404.2 Sloped glass. Glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunrooms, sloped roofs and other exterior applications shall be designed to resist the most critical of the following combinations of loads.

> **Exception:** Thedesign pressure rating of unit skylights and tubular daylighting devices shall be ~~designed~~ determined in accordance with Section 2405.5.

(Portions of section not shown remain unchanged)

2405.5 Unit skylights andtubulardaylightingdevices. Unit skylights and tubular devices shall be tested and labeled as complying with AAMA/WDMA/CSA 101/I.S./A440. The *label* shall state the name of the manufacturer, the *approved* labeling agency, the product designation and the performance grade rating as specified in AAMA/WDMA/CSA 101/I.S.2/A440. If the product manufacturer has chosen to have the performance grade of the skylight rated separately for positive and negative design pressure, then the *label* shall state both performance grade ratings as specified in AAMA/ WDMA/CSA 101/I.S.2/A440 and the skylight shall comply with Section 2405.5.2. If the skylight is not rated separately for positive and negative pressure, then the performance grade rating shown on the *label* shall be the performance grade rating determined in accordance with AAMA/WDMA/ CSA 101/I.S.2/A440 for both positive and negative design pressure and the skylight shall conform to Section 2405.5.1.

2405.5.1 ~~Unit~~ Skylights rated for the same performance grade for both positive and negative design pressure. The design of ~~unit~~ skylights shall be based on the following equation:

$F_g \le PG$ **(Equation 24-13)**

where:

F_g = ~~Maximum load on the skylight determined~~ Maximum load on the skylight determined from Equations 24-2 through 24-4 in Section 2404.2.
PG = Performance grade rating of the skylight.

2405.5.2 ~~Unit~~ Skylights rated for separate performance grades for positive and negative design pressure. The design of ~~unit~~ skylights rated for performance grade for both positive and negative design pressures shall be based on the following equations:

$F_{gi} \le PG_{Po}$ **(Equation 24-14)**
$F_{go} \le PG_{Ne}$ **(Equation 24-15)**

where:

PG_{Pos} = Performance grade rating of the skylight under positive design pressure;
PG_{Neg} = Performance grade rating of the skylight under negative design pressure; and
F_{gi} and F_{go} are determined in accordance with the following:

For $W_o \ge D$,
where:

W_o = Outward wind force, psf (kN/m^2) as calculated in Section 1609.
D = The dead weight of the glazing, psf (kN/m^2) as determined in Section 2404.2 for glass, or by the weight of the plastic, psf (kN/m^2) for plastic glazing.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5636_Text_S176-12 Sections 2404.2, 2405.5, 2405.5.1, 2405.5.2 Unit Skylights and

Page: 1

S176-12

Errata: Revise as follows:

2405.5 Unit skylights and tubular daylighting devices. Unit skylights and tubular daylighting devices shall be tested and labeled as complying with AAMA/WDMA/CSA 101/I.S./A440. The *label* shall state the name of the manufacturer, the *approved* labeling agency, the product designation and the performance grade rating as specified in AAMA/WDMA/CSA 101/I.S.2/A440. If the product manufacturer has chosen to have the performance grade of the skylight rated separately for positive and negative design pressure, then the *label* shall state both performance grade ratings as specified in AAMA/ WDMA/CSA 101/I.S.2/A440 and the skylight shall comply with Section 2405.5.2. If the skylight is not rated separately for positive and negative pressure, then the performance grade rating shown on the *label* shall be the performance grade rating determined in accordance with AAMA/WDMA/ CSA 101/I.S.2/A440 for both positive and negative design pressure and the skylight shall conform to Section 2405.5.1.

(Portions of code change not shown remain unchanged)

2012 ICC PUBLIC HEARING RESULTS **Page 214**

Committee Action: **Approved as Modified**

Modify proposal as follows:

2404.2 Sloped glass. Glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunrooms, sloped roofs and other exterior applications shall be designed to resist the most critical of the following combinations of loads.

Exception: The ~~design pressure~~ performance grade rating of unit skylights and tubular daylighting devices shall be determined in accordance with Section 2405.5.

(Portions of section not shown remain unchanged)

(Portions of proposal not shown are unchanged)

Committee Reason: This code change makes requirements applicable to tubular daylighting devices and this proposal is preferred over S301-12. The modification substitutes performance grade in the exception for consistency with Section 2404.5.

Page: 1

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S176-12

Errata: Revise as follows:

2405.5 Unit skylights and tubular daylighting devices. Unit skylights and tubular daylighting devices shall be tested and labeled as complying with AAMA/WDMA/CSA 101/I.S./A440. The *label* shall state the name of the manufacturer, the *approved* labeling agency, the product designation and the performance grade rating as specified in AAMA/WDMA/CSA 101/I.S.2/A440. If the product manufacturer has chosen to have the performance grade of the skylight rated separately for positive and negative design pressure, then the *label* shall state both performance grade ratings as specified in AAMA/ WDMA/CSA 101/I.S.2/A440 and the skylight shall comply with Section 2405.5.2. If the skylight is not rated separately for positive and negative pressure, then the performance grade rating shown on the *label* shall be the performance grade rating determined in accordance with AAMA/WDMA/ CSA 101/I.S.2/A440 for both positive and negative design pressure and the skylight shall conform to Section 2405.5.1.

(Portions of code change not shown remain unchanged)

2012 ICC PUBLIC HEARING RESULTS **Page 214**

Committee Action: **Approved as Modified**

Modify proposal as follows:

2404.2 Sloped glass. Glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunrooms, sloped roofs and other exterior applications shall be designed to resist the most critical of the following combinations of loads.

Exception: The ~~design pressure~~ performance grade rating of unit skylights and tubular daylighting devices shall be determined in accordance with Section 2405.5.

(Portions of section not shown remain unchanged)

(Portions of proposal not shown are unchanged)

Committee Reason: This code change makes requirements applicable to tubular daylighting devices and this proposal is preferred over S301-12. The modification substitutes performance grade in the exception for consistency with Section 2404.5.

Page: 1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5636_Rationale_S176-12 Unit Skylights and TDD ICC Report of Public

S5027

Date Submitted	7/9/2012	**Section**	2404.3.1 and 2404.3.3	**Proponent**	Michael Goolsby
Chapter	24	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

Legislative mandate resulted in deletion of non-wind related provisions of Chapter 24 HVHZ. With the elimination of Chapter 24 HVHZ sections and the utilization of base code sections formatting of certain base code sections becomes necessary. Where Chapter 24 sections give direction to non-Chapter 24 sections, those sections must be modified to also contain direction to the equivalent Chapter 16 HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Provides direction to applicable HVHZ section. Formatting only.

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

None. Provides direction to applicable HVHZ section. Formatting only.

Impact to industry relative to the cost of compliance with code

None. Provides direction to applicable HVHZ section. Formatting only.

Requirements

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary guidance applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2404.3.1 Vertical wired glass.
Wired glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609(HVHZ shall comply with Section 1620) for components and cladding according to the following equation:

...

2404.3.3 Vertical patterned glass.
Patterned glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609(HVHZ shall comply with Section 1620) for components and cladding according to the following equation:

(Equation 24-9)

where:

F_{gw}=Wind load on the glass computed per Section 1609(HVHZ shall comply with Section 1620).
F_{ge} =Nonfactored load from ASTM E 1300. The value for patterned glass shall be based on the thinnest part of the glass. Interpolation between nonfactored

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S5028

Date Submitted	7/9/2012	**Section**	2404.3.5	**Proponent**	Michael Goolsby
Chapter	24	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

Legislative mandate resulted in deletion of non-wind related provisions of Chapter 24 HVHZ. With the elimination of Chapter 24 HVHZ sections and the utilization of base code sections formatting of certain base code sections becomes necessary. Where Chapter 24 sections give direction to non-Chapter 24 sections, those sections must be modified to also contain direction to the equivalent Chapter 16 HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Provides direction to applicable HVHZ section. Formatting only.

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

None. Provides direction to applicable HVHZ section. Formatting only.

Impact to industry relative to the cost of compliance with code

None. Provides direction to applicable HVHZ section. Formatting only.

Requirements

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary guidance applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5028 Text Modification

2404.3.5 Vertical sandblasted glass.

Sandblasted glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors, and other exterior applications shall be designed to resist the wind loads in Section 1609(HVHZ shall comply with Section 1620) for components and cladding according to the following equation:

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Date Submitted	7/23/2012	**Section**	2404	**Proponent**	Dwight Wilkes
Chapter	24	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

This proposal is to coordinate the glass design load equations of Chapter 24 with those of Chapter 16, to the change of design wind load model from Allowable Stress Design to Strength Design in ASCE 7-10. These revisions were not carried back to the glass design load equations of Chapter 24.

Rationale

Reason: The purpose of this proposal is to coordinate the glass design load equations of Chapter 24 with those of Chapter 16.
The design load equations of Chapter 16 of the 2012 IBC were revised as appropriate to respond to the change of design wind load model from Allowable Stress Design to Strength Design in ASCE 7-10. These revisions, however, were not carried back to the glass design load equations of Chapter 24.
This proposal corrects this previous omission.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions have been enforced.

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

No impact as these provisions have been in the Florida Code and the modifications to the 2012 base code.

Impact to industry relative to the cost of compliance with code

No impact as these provisions have been enforced.

Requirements

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

Having these sections corrected will insure that the correct products are used and this will lead to the safety and welfare of the gereral public using these products.

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

The purpose of this proposal is to coordinate the glass design load equations of Chapter 24 with those of Chapter 16.
And in doing so will strengthen and/or improve the code.

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

This modification does not discriminate against materials, products, methods, or systems of construction.

Does not degrade the effectiveness of the code

This modification enhances the code by specific wind provisions for products that were established in the base code for the 2013 FBC and will bring the proposed modification to the next Florida Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

ICC Committee Action: "This proposal provides a needed update to ultimate design wind speed in Chapter 24" and was "Approved as Submitted" Therefore this modification corrects previous omission that exist in the 2012 Base Code.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

Revise as follows:

2404.1 Vertical glass. Glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads due to ultimate design wind speed V_{ult} in Section 1609 for components and cladding. Glass in glazed curtain walls, glazed storefronts and glazed partitions shall meet the seismic requirements of ASCE 7, Section 13.5.9. The load resistance of glass under uniform load shall be determined in accordance with ASTM E 1300.

The design of vertical glazing shall be based on the following equation:

$0.6F_{gw} = F_{ga}$ **(Equation 24-1)**

where:

F_{gw} = Wind load on the glass due to ultimate design wind speed V_{ult}, computed in accordance with

Section 1609.

F_{ga} = Short duration load on the glass as determined in accordance with ASTM E 1300.

2404.2 Sloped glass. Glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunrooms, sloped roofs and other exterior applications shall be designed to resist the most critical of the following combinations of loads.

$F_g = 0.6Wo - D$ **(Equation 24-2)**

$F_g = 0.6W_i + D + 0.5\ S$ **(Equation 24-3)**

$F_g = 0.5\ 0.3W_i + D + S$ **(Equation 24-4)**

where:

D = Glass dead load psf (kN/m2).

For glass sloped 30 degrees (0.52 rad) or less from horizontal,

= 13 t_g (For SI: 0.0245 tg).

For glass sloped more than 30 degrees (0.52 rad) from horizontal,

= 13 t_g cos ? (For SI: 0.0245 tg cos ?).

F_g = Total load, psf (kN/m2) on glass.

S = Snow load, psf (kN/m2) as determined in Section 1608.

t_g = Total glass thickness, inches (mm) of glass panes and plies.

W_i = Inward wind force, psf (kN/m2) due to ultimate design wind speed V_{ult} as calculated in Section 1609.

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W_o = Outward wind force, psf (kN/m2) due to ultimate design wind speed V_{ult}, as calculated in Section 1609.

? = Angle of slope from horizontal.

Exception: Unit skylights shall be designed in accordance with Section 2405.5.

The design of sloped glazing shall be based on the following equation:

$F_g = F_{ga}$ **(Equation 24-5)**

where:

F_g = Total load on the glass determined from the load combinations above.

F_{ga} = Short duration load resistance of the glass as determined according to ASTM E 1300 for Equations 24-2 and 24-3; or the long duration load resistance of the glass as determined according to ASTM E 1300 for Equation 24-4.

2404.3.1 Vertical wired glass. Wired glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to the following equation:

$0.6F_{gw} < 0.5\ F_{ge}$ **(Equation 24-6)**

where:

F_{gw} = Is the wind load on the glass due to ultimate design wind speed V_{ult}, computed per Section 1609.

F_{ge} = Nonfactored load from ASTM E 1300 using a thickness designation for monolithic glass that is not greater than the thickness of wired glass.

2404.3.2 Sloped wired glass. Wired glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunspaces, sloped roofs and other exterior applications shall be designed to resist the most critical of the combinations of loads from Section 2404.2.

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For Equations 24-2 and 24-3:

$F_g < 0.5\ F_{ge}$

(Equation 24-7)

For Equation 24-4:

$F_g < 0.3\ F_{ge}$

(Equation 24-8)

where:

F_g = Total load on the glass, as determined by equations 24-2, 24-3 or 24-4.

F_{ge} = Nonfactored load from ASTM E 1300.

2404.3.3 Vertical patterned glass. Patterned glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to the following equation:

$F_{gw} < 1.0\ F_{ge}$

(Equation 24-9)

where:

F_{gw} = Wind load on the glass due to ultimate design wind speed V_{ult} computed per Section 1609.

F_{ge} = Nonfactored load from ASTM E 1300. The value for patterned glass shall be based on the thinnest part of the glass. Interpolation between nonfactored load charts in ASTM E 1300 shall be permitted.

2404.3.4 Sloped patterned glass. Patterned glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunspaces, sloped roofs and other exterior applications shall be designed to resist the most critical of the combinations of loads from Section 2404.2.

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For Equations 24-2 and 24-3:

$F_g < 1.0\ F_{ge}$ **(Equation 24-10)**

For Equation 24-4:

$F_g < 0.6 F_{ge}$ **(Equation 24-11)**

where

F_g = Total load on the glass, as determined by equations 24-2, 24-3 or 24-4.

F_{ge} = Nonfactored load from ASTM E 1300. The value for patterned glass shall be based on the thinnest part of the glass. Interpolation between the nonfactored load charts in ASTM E 1300 shall be permitted.

2404.3.5 Vertical sandblasted glass. Sandblasted glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors, and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to the following equation:

~~F_g~~ $0.6F_{gw} < 0.5\ F_{ge}$ **(Equation 24-12)**

where:

~~F_g~~ F_{gw} = ~~Total~~ Wind load on the glass due to ultimate design wind speed V_{ult} computed per Section 1609.

F_{ge} = Nonfactored load from ASTM E 1300. The value for sandblasted glass is for moderate levels of sandblasting.

2405.5.2 Unit skylights rated for separate performance grades for positive and negative design pressure. The design of unit skylights rated for performance grade for both positive and negative design pressures shall be based on the following equations:

$F_{gi} = PG_{Po}$ **(Equation 24-14)**

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$F_{go} = PG_{Ne}$ **(Equation 24-15)**

where:

PG_{Pos} = Performance grade rating of the skylight under positive design pressure;

PG_{Neg} = Performance grade rating of the skylight under negative design pressure; and

F_{gi} and F_{go} are determined in accordance with the following:

For $\underline{0.6}W_o = D$,

where:

W_o = Outward wind force, psf (kN/m2) due to ultimate design wind speed V_{ult}, as calculated in Section 1609.

D = The dead weight of the glazing, psf (kN/m2) as determined in Section 2404.2 for glass, or by the weight of the plastic, psf (kN/m2) for plastic glazing.

F_{gi} = Maximum load on the skylight determined from Equations 24-3 and 24-4 in Section 2404.2.

F_{go} = Maximum load on the skylight determined from Equation 24-2.

For $\underline{0.6}W_o < D$, where:

W_o = Is the outward wind force, psf (kN/m2) due to ultimate design wind speed V_{ult} as calculated in Section 1609.

D = The dead weight of the glazing, psf (kN/m2) as determined in Section 2404.2 for glass, or by the weight of the plastic for plastic glazing.

F_{gi} = Maximum load on the skylight determined from Equations 24-2 through 24-4 in Section 2404.2.

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$F_{go} = 0$.

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Revise as follows:

2404.1 Vertical glass. Glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads due to ultimate design wind speed V_{ult} in Section 1609 for components and cladding. Glass in glazed curtain walls, glazed storefronts and glazed partitions shall meet the seismic requirements of ASCE 7, Section 13.5.9. The load resistance of glass under uniform load shall be determined in accordance with ASTM E 1300.

The design of vertical glazing shall be based on the following equation:

$0.6F_{gw} \leq F_{ga}$ **(Equation 24-1)**

where:

F_{gw} = Wind load on the glass due to ultimate design wind speed V_{ult}, computed in accordance with

Section 1609.

F_{ga} = Short duration load on the glass as determined in accordance with ASTM E 1300.

2404.2 Sloped glass. Glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunrooms, sloped roofs and other exterior applications shall be designed to resist the most critical of the following combinations of loads.

$F_g = 0.6Wo - D$ **(Equation 24-2)**

$F_g = 0.6W_i + D + 0.5\ S$ **(Equation 24-3)**

$F_g = 0.5\ 0.3W_i + D + S$ **(Equation 24-4)**

where:

D = Glass dead load psf (kN/m2).
For glass sloped 30 degrees (0.52 rad) or less from horizontal,
= 13 t_g (For SI: 0.0245 tg).
For glass sloped more than 30 degrees (0.52 rad) from horizontal,
= 13 t_g cos θ (For SI: 0.0245 tg cos θ).
F_g = Total load, psf (kN/m2) on glass.
S = Snow load, psf (kN/m2) as determined in Section 1608.
t_g = Total glass thickness, inches (mm) of glass panes and plies.
W_i = Inward wind force, psf (kN/m2) due to ultimate design wind speed V_{ult} as calculated in Section 1609.

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W_o = Outward wind force, psf (kN/m2) due to ultimate design wind speed V_{ult}, as calculated in Section 1609.
θ = Angle of slope from horizontal.

Exception: Unit skylights shall be designed in accordance with Section 2405.5. The design of sloped glazing shall be based on the following equation:

$F_g \leq F_{ga}$ **(Equation 24-5)**

where:

F_g = Total load on the glass determined from the load combinations above.
F_{ga} = Short duration load resistance of the glass as determined according to ASTM E 1300 for Equations 24-2 and 24-3; or the long duration load resistance of the glass as determined according to ASTM E 1300 for Equation 24-4.

2404.3.1 Vertical wired glass. Wired glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to the following equation:

$0.6F_{gw} < 0.5\ F_{ge}$ **(Equation 24-6)**

where:

F_{gw} = Is the wind load on the glass due to ultimate design wind speed V_{ult}, computed per Section 1609.
F_{ge} = Nonfactored load from ASTM E 1300 using a thickness designation for monolithic glass that is not greater than the thickness of wired glass.

2404.3.2 Sloped wired glass. Wired glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunspaces, sloped roofs and other exterior applications shall be designed to resist the most critical of the combinations of loads from Section 2404.2.

For Equations 24-2 and 24-3:
$F_g < 0.5\ F_{ge}$
(Equation 24-7)

For Equation 24-4:
$F_g < 0.3\ F_{ge}$
(Equation 24-8)

where:

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5584_Text_S295-12 ICC Proposed Changes_2.png

F_g = Total load on the glass, as determined by equations 24-2, 24-3 or 24-4.
F_{ge} = Nonfactored load from ASTM E 1300.

2404.3.3 Vertical patterned glass. Patterned glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to the following equation:

$F_{gw} < 1.0\ F_{ge}$
(Equation 24-9)

where:

F_{gw} = Wind load on the glass due to ultimate design wind speed V_{ult} computed per Section 1609.
F_{ge} = Nonfactored load from ASTM E 1300. The value for patterned glass shall be based on the thinnest part of the glass. Interpolation between nonfactored load charts in ASTM E 1300 shall be permitted.

2404.3.4 Sloped patterned glass. Patterned glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunspaces, sloped roofs and other exterior applications shall be designed to resist the most critical of the combinations of loads from Section 2404.2.
For Equations 24-2 and 24-3:
$F_g < 1.0\ F_{ge}$ **(Equation 24-10)**

For Equation 24-4:
$F_g < 0.6F_{ge}$ **(Equation 24-11)**

where

F_g = Total load on the glass, as determined by equations 24-2, 24-3 or 24-4.
F_{ge} = Nonfactored load from ASTM E 1300. The value for patterned glass shall be based on the thinnest part of the glass. Interpolation between the nonfactored load charts in ASTM E 1300 shall be permitted.

2404.3.5 Vertical sandblasted glass. Sandblasted glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors, and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to the following equation:

~~Fg~~$0.6F_{gw} < 0.5\ F_{ge}$ **(Equation 24-12)**

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where:

~~F_g~~ F_{gw} = ~~Total~~ Wind load on the glass due to ultimate design wind speed V_{ult} computed per Section 1609.

F_{ge} = Nonfactored load from ASTM E 1300. The value for sandblasted glass is for moderate levels of sandblasting.

2405.5.2 Unit skylights rated for separate performance grades for positive and negative design pressure. The design of unit skylights rated for performance grade for both positive and negative design pressures shall be based on the following equations:

$F_{gi} \leq PG_{Po}$ **(Equation 24-14)**
$F_{go} \leq PG_{Ne}$ **(Equation 24-15)**

where:

PG_{Pos} = Performance grade rating of the skylight under positive design pressure;
PG_{Neg} = Performance grade rating of the skylight under negative design pressure; and

F_{gi} and F_{go} are determined in accordance with the following:

For $0.6W_o \geq D$,

where:

W_o = Outward wind force, psf (kN/m2) due to ultimate design wind speed V_{ult}, as calculated in Section
1609.
D = The dead weight of the glazing, psf (kN/m2) as determined in Section 2404.2 for glass, or by the
weight of the plastic, psf (kN/m2) for plastic glazing.
F_{gi} = Maximum load on the skylight determined from Equations 24-3 and 24-4 in Section 2404.2.
F_{go} = Maximum load on the skylight determined from Equation 24-2.

For $0.6W_o < D$, where:

W_o = Is the outward wind force, psf (kN/m2) due to ultimate design wind speed V_{ult} as calculated in Section 1609.
D = The dead weight of the glazing, psf (kN/m2) as determined in Section 2404.2 for glass, or by the weight of the plastic for plastic glazing.

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F_{gi} = Maximum load on the skylight determined from Equations 24-2 through 24-4 in Section 2404.2.
F_{go} = 0.

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Date Submitted	7/25/2012	**Section**	2404	**Proponent**	T Stafford
Chapter	24	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Correlation with ASCE 7-10. Clarifies the appropriate reduction of design pressures for protocols that are and have been historically tested using allowable or nominal wind loads.

Rationale

Similar language is currently contained in the 2010 FBC. The changes shown here offer further clarification and are consistent with ICC Code Change S295-12 that was approved at the ICC Code Development Hearings. This proposal simply clarifies that the design pressures determined from ASCE 7 can be multiplied by 0.6 for protocols that are based on allowable or nominal wind loads. The wind speeds in ASCE 7-10 are strength-design level loads. Some reference standards, such as ASTM E 1300, are based on criteria that assumes the wind loads are nominal or allowable wind loads. The language provides the correlation between these reference standards and the strength design-level loads of ASCE 7-10.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

This proposal does not weaken or strengthen the code. It is simply a correlation.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

2404.1 Vertical glass. Glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads due to ultimate design wind speed V_{ult} in Section 1609 for components and cladding. Glass in glazed curtain walls, glazed storefronts and glazed partitions shall meet the seismic requirements of ASCE 7, Section 13.5.9. The load resistance of glass under uniform load shall be determined in accordance with ASTM E 1300.

The design of vertical glazing shall be based on the following equation:

$0.6F_{gw} = F_{ga}$ **(Equation 24-1)**

where:

F_{gw} = Wind load on the glass due to ultimate design wind speed V_{ult}, computed in accordance with Section 1609.

F_{ga} = Short duration load on the glass as determined in accordance with ASTM E 1300.

2404.2 Sloped glass. Glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunrooms, sloped roofs and other exterior applications shall be designed to resist the most critical of the following combinations of loads.

$F_g = 0.6W_o - D$ **(Equation 24-2)**

$F_g = 0.6W_i + D + 0.5\,S$ **(Equation 24-3)**

$F_g = 0.5\,0.3W_i + D + S$ **(Equation 24-4)**

where:

D = Glass dead load psf (kN/m2).

For glass sloped 30 degrees (0.52 rad) or less from horizontal,

= 13 t_g (For SI: 0.0245 t_g).

For glass sloped more than 30 degrees (0.52 rad) from horizontal,

= 13 t_g cos ? (For SI: 0.0245 t_g cos ?).

F_g = Total load, psf (kN/m2) on glass.

S = Snow load, psf (kN/m2) as determined in Section 1608.

t_g = Total glass thickness, inches (mm) of glass panes and plies.

W_i = Inward wind force, psf (kN/m2) due to ultimate design wind speed V_{ult} as calculated in Section 1609.

W_o = Outward wind force, psf (kN/m2) due to ultimate design wind speed V_{ult}, as calculated in Section 1609.

? = Angle of slope from horizontal.

Exception: Unit skylights shall be designed in accordance with Section 2405.5.

The design of sloped glazing shall be based on the following equation:

$F_g = F_{ga}$ **(Equation 24-5)**

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where:

Fg **= Total load on the glass determined from the load combinations above.**

Fga **= Short duration load resistance of the glass as determined according to ASTM E 1300 for Equations 24-2 and 24-3; or the long duration load resistance of the glass as determined according to ASTM E 1300 for Equation 24-4.**

2404.3.1 Vertical wired glass. Wired glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to the following equation:

0.6Fgw **< 0.5** ***Fga*** **(Equation 24-6)**

where:

Fgw **= Is the wind load on the glass due to ultimate design wind speed** ***Vult*****, computed per Section 1609.**

Fga **= Nonfactored load from ASTM E 1300 using a thickness designation for monolithic glass that is not greater than the thickness of wired glass.**

2404.3.2 Sloped wired glass. Wired glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunspaces, sloped roofs and other exterior applications shall be designed to resist the most critical of the combinations of loads from Section 2404.2.

For Equations 24-2 and 24-3:

Fg **< 0.5** ***Fga*** **(Equation 24-7)**

For Equation 24-4:

Fg **< 0.3** ***Fga*** **(Equation 24-8)**

where:

Fg **= Total load on the glass, as determined by equations 24-2, 24-3 or 24-4.**

Fga **= Nonfactored load from ASTM E 1300.**

2404.3.3 Vertical patterned glass. Patterned glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to the following equation:

Fgw **< 1.0** ***Fga*** **(Equation 24-9)**

where:

Fgw **= Wind load on the glass due to ultimate design wind speed** ***Vult*** **computed per Section 1609.**

Fga **= Nonfactored load from ASTM E 1300. The value for patterned glass shall be based on the thinnest part of the glass. Interpolation between nonfactored load charts in ASTM E 1300 shall be permitted.**

2404.3.4 Sloped patterned glass. Patterned glass sloped more than 15 degrees (0.26 rad) from vertical in skylights, sunspaces, sloped roofs and other exterior applications shall be designed to resist the most critical of the combinations of loads from Section 2404.2.

For Equations 24-2 and 24-3:

Fg **< 1.0** ***Fga*** **(Equation 24-10)**

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For Equation 24-4:

$Fg < 0.6Fge$ **(Equation 24-11)**

Where

Fg = Total load on the glass, as determined by equations 24-2, 24-3 or 24-4.

Fge = Nonfactored load from ASTM E 1300. The value for patterned glass shall be based on the thinnest part of the glass. Interpolation between the nonfactored load charts in ASTM E 1300 shall be permitted.

2404.3.5 Vertical sandblasted glass. Sandblasted glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors, and other exterior applications shall be designed to resist the wind loads in Section 1609 for components and cladding according to the following equation:

$Fg 0.6F_{gw} < 0.5\ Fge$ **(Equation 24-12)**

where:

Fg F_{gw} = Total Wind load on the glass due to ultimate design wind speed V_{ult} computed per Section 1609.

Fge = Nonfactored load from ASTM E 1300. The value for sandblasted glass is for moderate levels Of sandblasting.

2405.5.2 Unit skylights rated for separate performance grades for positive and negative design pressure. The design of unit skylights rated for performance grade for both positive and negative design pressures shall be based on the following equations:

$Fgi = PGPo$ **(Equation 24-14)**

$Fgo = PGNe$ **(Equation 24-15)**

where:

$PGPos$ = Performance grade rating of the skylight under positive design pressure;

$PGNeg$ = Performance grade rating of the skylight under negative design pressure; and

Fgi and Fgo are determined in accordance with the following:

For $0.6W_o = D$,

where:

W_o = Outward wind force, psf (kN/m2) due to ultimate design wind speed V_{ult}, as calculated in Section 1609.

D = The dead weight of the glazing, psf (kN/m2) as determined in Section 2404.2 for glass, or by the weight of the plastic, psf (kN/m2) for plastic glazing.

Fgi = Maximum load on the skylight determined from Equations 24-3 and 24-4 in Section 2404.2.

Fgo = Maximum load on the skylight determined from Equation 24-2.

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For 0.6*Wo* < *D*, where:

Wo = Is the outward wind force, psf (kN/m2) due to ultimate design wind speed *Vult* as calculated in Section 1609.

D = The dead weight of the glazing, psf (kN/m2) as determined in Section 2404.2 for glass, or by the weight of the plastic for plastic glazing.

Fgi = Maximum load on the skylight determined from Equations 24-2 through 24-4 in Section 2404.2.

Fgo = 0.

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S5029

Date Submitted	7/9/2012	**Section**	2407.1.4.2	**Proponent**	Michael Goolsby
Chapter	24	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

Legislative mandate resulted in deletion of non-wind related provisions of Chapter 24 HVHZ. With the elimination of Chapter 24 HVHZ sections and the utilization of base code sections formatting of certain base code sections becomes necessary. Where Chapter 24 sections give direction to non-Chapter 24 sections, those sections must be modified to also contain direction to the equivalent Chapter 16 HVHZ section.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Provides direction to applicable HVHZ section. Formatting only.

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

None. Provides direction to applicable HVHZ section. Formatting only.

Impact to industry relative to the cost of compliance with code

None. Provides direction to applicable HVHZ section. Formatting only.

Requirements

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

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

Provides necessary guidance applicable and equivalent HVHZ code sections.

Does not degrade the effectiveness of the code

Provides necessary guidance applicable and equivalent HVHZ code sections.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2407.1.4.2 Glass supporting top rail.

When the top rail is supported by glass, the assembly shall be tested according to the impact requirements of Section 1609.1.2 (HVHZ shall comply with Section 1618.4.6.4). The top rail shall remain in place after impact.

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S4940

Date Submitted	7/5/2012	**Section**	2501.1.1	**Proponent**	Michael Goolsby
Chapter	25	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

4939

Summary of Modification

Deletion of HVHZ sections

Rationale

Elimination of reference to remaining HVHZ sections, the sections are being deleted by a separate modification.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. The base code encompasses all previous HVHZ provisions and will be utilized. Formatting only.

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

None. The base code encompasses all previous HVHZ provisions and will be utilized. Formatting only.

Impact to industry relative to the cost of compliance with code

None. The base code encompasses all previous HVHZ provisions and will be utilized. Formatting only.

Requirements

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

N/A. Removing all HVHZ sections and utilizing the base code provisions for the proper design and installation of gypsum board and plaster.

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

N/A. Removing all HVHZ sections and utilizing the base code provisions for the proper design and installation of gypsum board and plaster.

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

N/A. Removing all HVHZ sections and utilizing the base code provisions for the proper design and installation of gypsum board and plaster.

Does not degrade the effectiveness of the code

N/A. Removing all HVHZ sections and utilizing the base code provisions for the proper design and installation of gypsum board and plaster.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4940 Text Modification

2501.1.1 General. Provisions of this chapter shall govern the materials, design, construction and quality of gypsum board, lath, gypsum plaster and cement plaster.

~~**Exception:** Buildings and structures located within the high-velocity hurricane zone shall comply with the provisions of Sections 2514 through 2520.~~

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Date Submitted	7/5/2012	**Section**	2516, 2516 and 2517	**Proponent**	Michael Goolsby
Chapter	25	**Affects HVHZ**	Yes	**Attachments**	No

General Comments No

Alternate Language No

Related Modifications

Summary of Modification

Deletion of HVHZ sections necessary to utilize base code provisions.

Rationale

Deletion of all Chapter 25 HVHZ sections in order to adopt base code provisions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. The base code encompasses all previous HVHZ provisions and will be utilized. Formatting only.

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

None. The base code encompasses all previous HVHZ provisions and will be utilized. Formatting only.

Impact to industry relative to the cost of compliance with code

None. The base code encompasses all previous HVHZ provisions and will be utilized. Formatting only.

Requirements

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

This modification removes all HVHZ sections and utilizes the base code provisions for the proper design and installation of gypsum board and plaster.

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

This modification removes all HVHZ sections and utilizes the base code provisions for the proper design and installation of gypsum board and plaster.

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

This modification removes all HVHZ sections and utilizes the base code provisions for the proper design and installation of gypsum board and plaster.

Does not degrade the effectiveness of the code

This modification removes all HVHZ sections and utilizes the base code provisions for the proper design and installation of gypsum board and plaster.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4939 Text Modification

Page: 1

SECTION 2516

HIGH-VELOCITY HURRICANE ZONES — STUCCO

2516.1 General.

2516.1.1 Portland cement-based plaster shall be applied in accordance with ASTM C 926, excluding Table 4 of that standard.

2516.1.2 Stucco base and finish coats, where required to meet fire-resistance requirements, shall be mixed in proportion of at least one part portland cement to a maximum of two and one-half parts sand by volume.

2516.1.3 Approved manufacturing products may be used for base and finish coats.

2516.1.4 Materials. The materials of stucco shall conform to ASTM C 926.

2516.1.5 Admixtures.

2516.1.5.1 Plasticity agents shall be of approved types and amounts and, where added to Portland cement in the manufacturing process, no additions shall be made later.

2516.1.5.2 Color may be added to the finish coat in approved amounts.

2516.1.6 Application.

2516.1.6.1 Stucco applied to concrete or masonry to meet fire-resistance requirements shall consist of at least two coats, and the total thickness shall be not less than 1/2 inch (12.7 mm).

2516.1.6.2 Masonry surfaces on which all stucco is applied shall be clean, free from efflorescence, damp and sufficiently rough, or coated with an approved bonding agent, to insure proper bond.

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S4939 Text Modification

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~~**2516.1.6.3** All concrete surfaces shall be coated with an approved bonding agent or shall be effectively roughened.~~

~~**2516.1.6.4** The first coat shall be well forced into the pores of the masonry, shall be brought out to grounds, straightened to a true surface and left rough enough to receive the finish coat.~~

~~**2516.1.6.5** The first coat shall be rodded and waterfloated to a true surface approximately one-half the total thickness.~~

~~**2516.1.6.6** The base coat shall be damp cured for a period of not less than 24 hours.~~

~~**2516.1.6.7** In lieu thereof, the finish coat, where containing appropriate waterproofing or curing admixtures, may be applied as soon as the base coat has attained initial set and is sufficiently firm to receive the finish coat.~~

~~**2516.1.6.8** The finish coat shall be applied over a uniformly damp but surface-dry base.~~

~~**2516.1.6.9** Stucco shall be kept damp for a period of not less than 48 hours after application of the finish coat.~~

~~**2516.1.6.10** In lieu thereof, the finish coat may contain appropriate approved waterproofing or curing agents.~~

~~**2516.2 Stucco on walls other than concrete or masonry.**~~

~~**2516.2.2 Moisture barrier.** Wood shall be covered with 15-pound (7 kg) roofing felt, or other approved equally moisture-resisting layer, and metal reinforcement as set forth herein.~~

~~**2516.2.3 Metal reinforcement.**~~

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S4939 Text Modification

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~~**2516.2.3.1** Stucco shall be reinforced with galvanized expanded metal weighing no less than 1.8 pounds per square yard (0.98 kg/m2), or galvanized welded or woven wire fabric weighing no less than 1 pound per square yard (0.54 kg/m2).~~

~~**2516.2.3.2** All metal lathing shall be lapped not less than 1 inch (25 mm).~~

~~**2516.2.3.3** Metal reinforcement shall be furred out from the backing by an approved method.~~

~~**2516.2.3.4** Fastenings into wood sheathing or wood framing shall be by galvanized nails, with heads not less than 3/8 inch (9.5 mm) in diameter, driven to full penetration, using a minimum of two nails per square foot (0.093 m2), or by approved staples having equal resistance to withdrawal.~~

~~**2516.2.3.5** The fastening of rib lath to metal members shall be by #8 galvanized sheet metal screws, using a minimum of two screws per square foot (0.093 m2).~~

~~**2516.2.4 Application.**~~

~~**2516.2.4.1** Stucco applied on metal lath shall be three-coat work applied to a total thickness of not less than 7/8inch (22.2 mm) thickness except as required to meet fire-resistance requirements.~~

~~**2516.2.4.2** The first coat shall be forced through all openings in the reinforcement to fill all spaces and scored horizontally.~~

~~**2516.2.4.3** The second coat shall be applied after the first coat has set sufficiently to provide a rigid backing.~~

~~**2516.2.4.4** The third coat shall be applied as soon as the second coat has attained initial set.~~

~~**SECTION 2517**~~

~~**HIGH-VELOCITY HURRICANE ZONES — GYPSUM BOARD PRODUCTS AND ACCESSORY ITEMS**~~

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~~**2517.4 Wood studs and wood ceiling supports.** Wood studs and wood ceiling supports shall comply with Chapter 23 (High-Velocity Hurricane Zones).~~

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S5648

Date Submitted	7/25/2012	**Section**	Table 2508.5	**Proponent**	T Stafford
Chapter	25	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Clarifies that the shear values for gypsum board diaphragms are allowable (ASD) values.

Rationale

This language is currently contained in the 2010 FBC. No new requirements are being proposed. This proposal clarifies that the shear values for gypsum board diaphragms in Table 2508.5 are allowable or ASD values. This distinction is important due to changes in ASCE 7 where the basis for the design wind speeds has changed from ASD-level to strength design-level.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

This proposal neither weakens nor strengthens the code. It is simply a correlation.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5648 Text Modification

Page: 1

TABLE 2508.5

ALLOWABLE SHEAR CAPACITY FOR HORIZONTAL WOOD FRAMED GYPSUM BOARD DIAPHRAGM CEILING ASSEMBLIES

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Date Submitted	7/17/2012	**Section**	2603	**Proponent**	Suzanne Davis
Chapter	26	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Removal of figure 2603.8. To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Rationale

Removal of this figure. State agency requirement. To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Currently used under the 2010 Code, no new requirements being established

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

Currently used under the 2010 Code, no new requirements being established

Impact to industry relative to the cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Requirements

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

Does not degrade the effectiveness of the code

Carried over from the previous, field tested and proven to be effective

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

Removal of this figure. State agency requirement. To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5221 Text Modification

Page: 1

FIGURE 2603.8

TERMITE INFESTATION PROBABILITY MAP

2603.8.2 Add to read as shown.

2603.8.2 Clearance between earth and foam plastics applied to the exterior wall shall be not less than 6 inches (152 mm).

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Date Submitted	7/31/2012	**Section**	3105	**Proponent**	Joseph Belcher
Chapter	39	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

202 Definition of Awning

Summary of Modification

Retains provisions for awnings and canopies.

Rationale

Originally, the provisions were adapted from the South Florida Building Code and placed in the 2004 FBC because the base code did not address this type of construction in a meaningful manner. Many problems were encountered in the field and at the time the Commission received numerous requests for Declaratory Statements on issues related to awnings and canopies. It was determined the FBC had no clear cut provisions relating to these structures and the provisions above were submitted. Once in the code the problems were resolved.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. provisions have been in the code since the 2004 Edition.

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

No impact. provisions have been in the code since the 2004 Edition.

Impact to industry relative to the cost of compliance with code

No impact. provisions have been in the code since the 2004 Edition.

Requirements

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

The modification is connected to public health, safety, and welfare by providing criteria addressing a popular and common type of structure which are not addressed in depth by the base code.

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

The modification strengthens and improves the code by providing specific criteria addressing a popular and common type of structure or element for which are not addressed in depth by the base code.

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

The change does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The change does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5932 Text Modification

Page: 1

SECTION 3105

AWNINGS AND CANOPIES

3105.1 General. ***Awnings*** or ***canopies*** shall comply with the requirements of Sections 3105.2 through 3105.~~4~~ 6 and other applicable sections of this code.

3105.2 Definition. The following terms ~~is~~ are defined in Chapter 2:

AWNING

RETRACTABLE AWNING.

3105.3 Design and construction. ***Awnings*** and ***canopies*** shall be designed and constructed to withstand wind or other lateral loads and live loads as required by Chapter 16 and in accordance with Section 3105.4 of this code with due allowance for shape, open construction and similar features that relieve the pressures or loads. Structural members shall be protected to prevent deterioration. ***Awnings*** shall have frames of noncombustible material, ***fire-retardant treated wood***, wood of Type IV size, or 1-hour construction with combustible or noncombustible covers and shall be fixed, retractable, folding or collapsible.

3105.3.1 Location.

3105.3.1.1

Fabric awnings and fabric-covered frames located over public property or in areas accessible to the general public shall be constructed so that no rigid part of such fabric awnings or fabric-covered frames shall be less than 7 feet 6 inches (2286 mm) from the grade directly below, and no part of the cloth drop shall be less than 7 feet (2134 mm).

3105.3.1.2

A fixed fabric awning or fabric-covered frame shall not extend over public property more than two-thirds the distance from the property line to the nearest curb line in front of the building site as measured from the exterior face of the building, nor shall any portion be closer than 18 inches (457 mm) to the curb line.

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Exceptions:

1. If installed over 14 feet (4267 mm) in height, it may occupy the entire width of the sidewalk.

2. Unless otherwise regulated by local zoning requirements.

3105.3.1.3

Fabric-covered framework in whole or in part of fabric, erected in connection with gasoline service stations may not be erected within 15 feet (4572 mm) of where flammable liquids are transferred.

3105.3.1.4

Movable fabric awnings or fabric covered frames may extend over public property for a distance of not more than 5 feet (1524 mm), provided such awnings or any part thereof maintain a clear height of 8 feet (2438 mm) above the sidewalk. All such movable awnings shall be supported on metal frames attached to the building.

3105.3.1.5

Every fabric awning or fabric-covered frame shall be located as not to interfere with the operation of any exterior standpipe, stairway, fire escape or any means of egress to and from the building.

3105.3.2 Area.

No fabric awning or fabric-covered frame shall exceed the area of the building to which it is attached.

3105.3.4 Material.

3105.3.4.1

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Fabric used for awnings or fabric-covered frames shall meet the flame propagation performance criteria of NFPA 701 or have a *flame spread index* not greater than 25 when tested in accordance with ASTM E 84 or UL 723.

Exception: Awnings or fabric-covered frames used in conjunction with Group R-3 occupancies.

3105.3.4.2

Supports for fabric awnings and fabric-covered frame shall be of metal or similar durable material.

3105.4 Design.

3105.4.1

Design of the framing members shall not be based on removal or repositioning of parts, or the whole, during periods of 75 mph wind velocity.

3105.4.2

Design of the structural framing members shall be based on rational analysis, using the applicable wind loads of Chapter 16 as shown below:

3105.4.2.1

The wind design loads for any fabric or membrane-covered structure designed with a quick removal or breakaway membrane or fabric at wind velocities of 75 mph, shall be based on the following criteria:

1. Minimum wind speed 105 mph

2. Exposure Category B, C or D as defined in Chapter 16.

3105.4.2.2

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The wind design loads for any fabric or membrane covered structure designed with a permanent or nonremovable fabric or membrane, shall be based on the following criteria:

1. Minimum wind speed velocity as required in Chapter 16 using Figure 1609C.

2. Exposure B, C or D as defined in Chapter 16.

3105.4.3

The fabric portions of awnings fabric covered frames shall be securely laced, tied or otherwise fastened to the frame; no rafter or front bar will be permitted in pockets; and in no case shall a rolling curtain be caused to operate over a canopy frame.

3105.4.4

The horizontal projection of cantilevered portions shall not be greater than two times the height, except where the building construction does not permit a proper installation; in which case, variance may be permitted by the building official, based on special design and construction.

3105.5 Rigid awnings and canopy shutters.

3105.5.1 Loads.

Rigid awnings and canopy shutters shall be designed to resist the loads set forth in Chapter 16 of this Code except that structures or parts thereof which are intended to be removed or repositioned during periods of high wind velocity shall be designed in their open or extended position to design pressures based on a basic wind speed of minimum 115 mph, 3-second wind gust with applicable shape factors and to resist not less than 10 psf (478 Pa) roof live load.

3105.5.2

Where such structure is intended to be folded or otherwise repositioned to close an opening when the building is unattended or act as a storm shutter, the design in the closed position shall also comply with Chapter 16 and shall be impact resistant in accordance with Section 1609.1.4.

3105.5.3

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Structures designed to be readily removed or repositioned during periods of high wind velocity shall be posted with a legible and readily visible decal or painted instructions to the owner or tenant to remove or reposition the structure or part thereof during such periods of time as are designated by the U.S. Weather Bureau as being a hurricane warning or alert.

3105.4 6 Canopy materials. ***Canopies*** shall be constructed of a rigid framework with an ***approved*** covering that meets the fire propagation performance criteria of NFPA 701 or has a ***flame spread index*** not greater than 25 when tested in accordance with ASTM E 84 or UL 723.

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Originally, the provisions were adapted from the South Florida Building Code and placed in the 2004 FBC because the base code did not address this type of construction in a meaningful manner. Many problems were encountered in the field and at the time the Commission received numerous requests for Declaratory Statements on issues related to awnings and canopies. It was determined the FBC had no clear cut provisions relating to these structures and the provisions above were submitted. Once in the code the problems were resolved.

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S5226

Date Submitted	7/17/2012	**Section**	3114 Airport Noise	**Proponent**	Suzanne Davis
Chapter	39	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Rationale

To carry forward the airport noise provisions of the FBC 2010 Code. To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Currently used under the 2010 Code, no new requirements being established

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

Currently used under the 2010 Code, no new requirements being established

Impact to industry relative to the cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Requirements

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

Does not degrade the effectiveness of the code

Carried over from the previous, field tested and proven to be effective

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

To carry forward the airport noise provisions of the FBC 2010 Code. To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

Proponent Ken Cureton **Submitted** 9/21/2012 **Attachments** No

Comment:
The proposal provides for provisions with regard to noise contour lines as per 553.73(7)(b) FS.

S5226-G1

Section 3113 Airport Noise. Add to read as shown.

SECTION 3114AIRPORT NOISE

3114.1 Airport noise study guidelines. Add to read as shown.

3114.1 The Aviation Safety and Noise Abatement Act of 1979 14 CFR Part 150 (US Department of Transportation) including revisions through January 2005 and hereby adopted as a guideline for establishing airport noise control. When required by a local government **by local ordinance** to **provide** noise attenuation in a new structure or addition to an existing structure near an airport in the area of the local government, the applicant must provide either:

* a testing certificate from an accredited noise testing lab that a new structure or addition to existing structure built to the submitted engineering plans will achieve an average minimum dBA reduction equal to or greater than the reduction required,

* an engineering judgement signed and sealed by an engineer licensed in the State of Florida that the structure or addition built to the submitted engineering plans will achieve an average minimum dBA reduction equal to or greater than the reduction required, or

* plans using the standards contained in "Guidelines for Sound Insulation of Residences Exposed to Aircraft Operations" prepared for the Department of the Navy by Wyle Research and Consulting, Arlington, Virginia, April 2005 on file with the Florida Building Commission.

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Date Submitted	7/31/2012	**Section**	AAF	**Proponent**	Joseph Belcher
Chapter	35	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Retains information for adopted AAF Guide.

Rationale

Retains reference information providing the author, title, and edition of; and, cross referencing the sections of the code referring to, a prescriptive design guide for aluminum structures, which was previously adopted.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. This has been in FBC since the 2004 Edition.

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

No impact. This has been in FBC since the 2004 Edition.

Impact to industry relative to the cost of compliance with code

No impact. This has been in FBC since the 2004 Edition.

Requirements

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

The change has a reasonable and substantial connection to the welfare of the general public because it provides the author, title, and edition of; and, cross referencing the sections of the code referring to, a prescriptive design guide for aluminum structures, which was previously adopted.

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

The change strengthens and improves the code by providing the author, title, and edition of; and, cross referencing the sections of the code referring to, a prescriptive design guide for aluminum structures, which was previously adopted.

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

The change does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The change improves the effectiveness of the code by providing the author, title, and edition of; and, cross referencing the sections of the code referring to, a prescriptive design guide for aluminum structures, which was previously adopted.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

AAF	Aluminum Association of Florida, Inc. 3165 McCrory Place, Suite 185 Orlando, FL 32803	
Standard Reference Number	Title	Referenced in code section number
AAF—10	Guide to Aluminum Construction in High Wind Areas 2010	2002.4.1, 1622.1.2

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5830_TextOfModification_1.png

The base code definition does not address screen enclosures adequately and they are a common structure throughout Florida. The provisions are the result of scientific investigation specifically geared toward developing criteria for the construction of wind resistant screen enclosures. The fact that there are so many screen enclosures constructed in Florida and that the entire state is a hurricane prone region merits Florida specific provisions for the design of such structures.

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S5830 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

Page: 1

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Date Submitted	8/2/2012	**Section**	ANSI	**Proponent**	Randall Shackelford
Chapter	35	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

5797

Updating these standards is the companion to 5797

Summary of Modification

Fixes an error in the 2012 IBC by correcting the ASTM Standard for testing of joist hangers and connectors and allowing the option of using the newest standard for testing

Rationale

This proposal to the Florida Building Code is needed so that the correct test standard is referenced for testing of joist hangers and connectors, which are very important elements of the main wind force resisting system.

In the 2009 and 2012 IBC, the test standard ASTM D1761 that traditionally has been used for connectors was updated to the 2006 edition. However, in the 2006 edition, requirements for testing of joist hangers had been deleted. So there is an inadvertant "hole" because no test standards for joist hangers or connectors exist.

This proposal reinstates the test standard that has been used successfully for a long time, ASTM D 1761-88 (2000). In addition, it adopts the newest test standard for connectors, ASTM D 7147-11.

This proposal mirrors a similar proposal that was successfully adopted into the 2007 Florida Building Code. If this proposal is not adopted, there will be no standard for load rating of connectors.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Will provide guidance on how joist hangers and connectors must be load rated. This will allow for efficient and fair use of the Florida Product Approval system

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

None. Maintains current requirements.

Impact to industry relative to the cost of compliance with code

Since this proposal is nearly identical to what is contained in the 2010 FBC, there will be no additional cost to industry to comply.

Requirements

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

Joist Hangers and connectors are an important part of the Main Wind Force Resisting System. Without requirements for load rating these connectors, manufacturers could possibly publish loads that did not contain adequate safety factors or comply with calculated fastener capacity

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

Strengthens the code by filling a "hole" and providing a method for load rating joist hangers and connectors.

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

Does not discriminate. Same language as in 2010 FBC.

Does not degrade the effectiveness of the code

Does not degrade effectiveness of code. Maintains same requirements as in 2010 FBC.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

Explanation of Choice

A similar proposal has been made to ICC for the 2015 IBC.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

OTHER

Explanation of Choice

A similar proposal has been submitted to ICC for inclusion in the 2015 IBC.
It has passed the Structural Commitee, and when included in the 2015 IBC, no amendment will be necessary in the next version of the FBC.

Add to Chapter 35 under ASTM

D7147 – 11 Standard Specification for Testing and Establishing Allowable Loads of Joist Hangers 1711.1.1

D 1761-88 (2000) Standard Test Methods for Mechanical Fasteners in Wood 1716.1.2, 1716.1.2.1, 1716.1.2.2

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_6023_TextOfModification_1.png

S6023 Prior Code Version question. submitted or attempted to be included

Page: 1

PUBLIC CODE CHANGE PROPOSAL FORM

FOR PUBLIC PROPOSALS TO THE INTERNATIONAL CODES
2012/2013 CODE DEVELOPMENT CYCLE

CLOSING DATES: Group A Codes: January 3, 2012
Group B Codes: January 3, 2013

See Item 3 of these instructions for additional information concerning Group A and Group B Code Development Committees Responsibilities

1)

Name: Randall Shackelford, P.E.		**Date: January 3, 2012**	
Jurisdiction/Company: Simpson Strong-Tie Company, Inc.			
Submitted on Behalf of: Simpson Strong-Tie Company, Inc.			
Address: 2221 Country Lane			
City: McKinney		**State: TX**	**Zip Code: 75069-1241**
Phone: 972-439-3029	**Ext.**	**Fax: 972-542-4139**	
E-mail address (see # 4 below): rshackelford@strongtie.com			

2) **Copyright Release:** In accordance with Council Policy CP #28 Code Development (CP #28), all Code Change Proposals, Floor Modifications and Public Comments are required to include a copyright release. A copy of the copyright release form is included at the end of this form. Please follow the directions on the form. This form as well as an alternative release form can also be downloaded from the ICC website at www.iccsafe.org. **If you have previously executed the copyright release for this cycle, please check the below:**

__X__ **2012/2013 Cycle copyright release on file**

3) **Code:** Indicate appropriate International Code(s) associated with this Public Proposal – Please use Acronym: _IBC_ ___

If you have also submitted a separate coordination change to another I-Code, please indicate the code: _____
(See section below for list of names and acronyms for the International Codes).

NOTE: Sections of the International Codes that have a letter designation in brackets in front of them are the responsibility of a different committee than the committee normally responsible for that code. For instance, Section 301.1.4 of the IEBC has a [B] in front of it, meaning that this section is the responsibility of one of the IBC Code Development Committees (in this case, IBC-S). Any proposed changes to Section 301.1.4 will be heard by the IBC-Structural committee.

Therefore, some code change proposals to Group B code text may be due by January 3, 2012, in order to be heard by Group A code development committees, and vice versa (proposed revision to a Group A code due January 3, 2013.) Please go to www.iccsafe.org/responsibilites for detailed information on Group A and Group B Code Development Committee responsibilities.

4) **Multiple Proposals:** A proponent shall not submit multiple code change proposals to the same code section. When a proponent submits multiple code change proposals to the same section, the proposals shall be considered as incomplete proposals and not processed in accordance with Section 4.3 of CP #28. This restriction shall not apply to code change proposals that attempt to address differing subject matter within a code section.

5) **Referenced Standards:** Check here if this code change proposal includes reference to a standard that is not currently referenced in one of the I-Codes. __X__

NOTE: If a new referenced standard is proposed, a copy of the standard must be provided by the proponent of the code change proposal. (This code change proposal will be considered incomplete and not processed if the new standard is not submitted in at least consensus draft form in accordance with Section 3.6 of CP #28.) If you have forwarded a copy of the standard(s) to ICC please check below:
__X___ Copy of new referenced standard(s) sent. (Please check: Electronic _X_ or Hard Copy ___)

6) **E-mail address:** Your email address will be published with your code change proposal unless you check here: _____

7) **Information required:** Be sure to format your proposal and include all information as indicated below and in the Code Change Proposal Instructions' section on Page 2 of this form.

8) **Format:** Proposals should be sent to the office below via regular mail or email. An e-mail submittal is preferred, including an electronic version, in either WordPerfect or Word (see proposal formatting section on Page 2 of this form).

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_6023_PQ3_2012Cycle-IBC1711HangerTestingFINAL_1.png

S6023 Prior Code Version question. submitted or attempted to be included

Page: 2

CODE CHANGE PROPOSAL FORM

Code: _____ –12/13

Code Sections/Tables/Figures Proposed for Revision (3.3.2); Note: *If the proposal is for a new section, indicate (new).*

Section 1711.1
Chapter 35

Proponent: ***Name/Company/Representing (3.3.1):*** *(NOTE: DO NOT USE ACRONYMS FOR YOUR COMPANY OR ORGANIZATIONAL NAME)*

Randall Shackelford, P.E., representing Simpson Strong-Tie Co., Inc.

Revise as follows:

1711.1 Joist hangers. Testing of joist hangers shall be in accordance with Sections 1711.1.1 through 1711.1.2~~3~~, as applicable.
1711.1.1 ~~General~~ Allowable Stress Design. The allowable vertical load-bearing capacity, torsional moment capacity and deflection characteristics of joist hangers shall be determined in accordance with ASTM D7147 ~~1761 using lumber having a specific gravity of 0.49 or greater, but not greater than 0.55, as determined in accordance with AF&PA NDS for the joist and headers.~~
~~**Exception:** The joist length shall not be required to exceed 24 inches (610 mm).~~
1711.1.2 LRFD or Strength Design. The resistance of joist hangers for LRFD or strength design shall be determined using an approved method. ~~**Vertical load capacity for joist hangers.** The vertical load-bearing capacity for the joist hanger shall be determined by testing a minimum of three joist hanger assemblies as specified in ASTM D 1761. If the ultimate vertical load for any one of the tests varies more than 20 percent from the average ultimate vertical load, at least three additional tests shall be conducted. The allowable vertical load-bearing of the joist hanger shall be the lowest value determined from the following:~~
~~1. The lowest ultimate vertical load for a single hanger from any test divided by three (where three tests are conducted and each ultimate vertical load does not vary more than 20 percent from the average ultimate vertical load).~~
~~2. The average ultimate vertical load for a single hanger from all tests divided by three (where six or more tests are conducted).~~
~~3. The average from all tests of the vertical loads that produce a vertical movement of the joist with respect to the header of 1/8 inch (3.2 mm).~~
~~4. The sum of the allowable design loads for nails or other fasteners utilized to secure the joist hanger to the wood members and allowable bearing loads that contribute to the capacity of the hanger.~~
~~5. The allowable design load for the wood members forming the connection.~~
~~**1711.1.2.1 Design value modifications for joist hangers.**~~
~~Allowable design values for joist hangers that are determined by Item 4 or 5 in Section 1711.1.2 shall be permitted to be modified by the appropriate load duration factors as specified in AF&PA NDS but shall not exceed the direct loads as determined by Item 1, 2 or 3 in Section 1711.1.2. Allowable design values determined by Item 1, 2 or 3 in Section 1711.1.2 shall not be modified by load duration factors.~~
~~**1711.1.3 Torsional moment capacity for joist hangers.**~~
~~The torsional moment capacity for the joist hanger shall be determined by testing at least three joist hanger assemblies as specified in ASTM D 1761. The allowable torsional moment of the joist hanger shall be the average torsional moment at which the lateral movement of the top or bottom of the joist with respect to the original position of the joist is 1/8 inch (3.2 mm).~~

Add new standard as follows:

Chapter 35

ASTM

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

Standard Reference number	Title	Referenced in code section number
D 7147—11	Standard Specification for Testing and Establishing Allowable Loads of Joist Hangers	1810.3.2.3

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_6023_PQ3_2012Cycle-IBC1711HangerTestingFINAL_2.png

S6023 Prior Code Version question. submitted or attempted to be included

Reason:

In the 2012 IBC, this section requires that the capacity of joist hangers be determined using ASTM D1761. The 2006 edition of that standard is referenced in Chapter 35. The problem is that the 2006 edition no longer contains requirements for testing of joist hangers. All joist hanger testing requirements were removed, and a new standard, ASTM D7147 was written for testing of joist hangers. The newest edition of the ASTM D7147 standard is the 2011 edition. That is being suggested as the most applicable standard for determining allowable loads for joist hangers.
The specific methods for evaluating the test data can be deleted because all those requirements are now contained in ASTM D7147, whereas they were not present in D1761.
This standard is only applicable for determining allowable stress loads. It does not give guidance for determining resistances for LRFD. There are documents that give such guidance, such as the American Wood Council *Load and Resistance Factor Design (LRFD) Manual for Engineered Wood Construction.* There is precedence for having sections for both ASD and LRFD. Sections 1908 and 1909 contain requirements for design of anchorage to concrete using allowable stress and strength design, respectively.

Cost Impact:

ASTM D7147 does contain some additional requirements for testing and recording the hanger steel strength, wood specific gravity, and bending yield strength of fasteners, which could increase the cost of testing over ASTM D1761-2000, but that standard is no longer referenced anyway so that is not really an option.

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

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S6021

Date Submitted	8/2/2012	**Section**	ASTM	**Proponent**	Joseph Belcher
Chapter	35	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

No

Summary of Modification

Updates standards.

Rationale

Updates standards to most recent editions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No cost impact.

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

No cost impact.

Impact to industry relative to the cost of compliance with code

No cost impact.

Requirements

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

The change updates standards to the most recent editions.

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

The change updates standards to the most recent editions.

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

The change updates standards to the most recent editions.

Does not degrade the effectiveness of the code

The change updates standards to the most recent editions.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

ASTM		
Standard reference number	Title	Referenced in code section number
C 90-~~06~~ 11b	Specification for Loadbearing Concrete Masonry Units	No Change
C 926-~~98a (2005)~~ 11-a	Specification for Application of Portland Cement-based Plaster	No Change
C 1063-~~06~~ 12a	Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-based Plaster	No Change

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This document is not an ASTM standard and is intended only to provide the user of an ASTM standard an indication of what changes have been made to the previous version. Because it may not be technically possible to adequately depict all changes accurately, ASTM recommends that users consult prior editions as appropriate. In all cases only the current version of the standard as published by ASTM is to be considered the official document.

Designation:C1063-11b Designation: C1063 - 12a

Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster[1]

This standard is issued under the fixed designation C1063; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (′) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This specification covers the minimum requirements for lathing and furring for the application of exterior and interior portland cement-based plaster as in Specification C926 or Specification C841.

1.2 Where a fire resistance rating is required for plastered assemblies and constructions, details of construction shall be in accordance with reports of fire tests of assemblies that have met the requirements of the fire rating imposed.

1.3 Where a specific degree of sound control is required for plastered assemblies and constructions, details of construction shall be in accordance with official reports of tests conducted in recognized testing laboratories in accordance with the applicable requirements of Test Method E90.

1.4 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A641/A641M Specification for ZincCoated (Galvanized) Carbon Steel Wire

A653/A653M Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

B69 Specification for Rolled Zinc

B221 Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes

C11 Terminology Relating to Gypsum and Related Building Materials and Systems

C841 Specification for Installation of Interior Lathing and Furring

C847 Specification for Metal Lath

C926 Specification for Application of Portland Cement-Based Plaster

C933 Specification for Welded Wire Lath

C954 Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness

C1002 Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs

C1032 Specification for Woven Wire Plaster Base

D1784 Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

D4216 Specification for Rigid Poly(Vinyl Chloride) (PVC) and Related PVC and Chlorinated Poly(Vinyl Chloride) (CPVC) Building Products Compounds

E90 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

3. Terminology

3.1 *Definitions*—For definitions relating to Ceilings and Walls, see Terminology C11.

3.2 *Definitions of Terms Specific to This Standard:*

[1] This specification is under the jurisdiction of ASTM Committee C11 on Gypsum and Related Building Materials and Systems and is the direct responsibility of Subcommittee C11.03 on Specifications for the Application of Gypsum and Other Products in Assemblies.

Current edition approved Dec. 1, 2011.April 15, 2012. Published JanuaryMay 2012. Originally approved in 1986. Last previous edition approved in 2011 as C1063 - 11ab. DOI: 10.1520/C1063-11B.10.1520/C1063-12A.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard.**

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3.2.1 *barrier wall*, *n*—type of wall system that is intended to block or interrupt the movement of water to the interior.

3.2.2 *building enclosure*, *n*—system of building assemblies and materials designed and installed in such a manner as to provide a barrier between different environments.

3.2.3 *control joint*, *n*—a joint that accommodates movement of plaster shrinkage and curing along predetermined, usually straight, lines.

3.2.4 *drainage plane*, *n*—surface between the back of the cladding and the front of the water barrier which resists liquid moisture infiltration and provides for gravitational flow to a collection or exhaust location.

3.2.5 *drainage space*, *n*—volumetric area that allows the gravitational flow of liquid moisture to a collection or exhaust location.

3.2.6 *drainage wall*, *n*—a wall system in which the cladding provides a substantial barrier to water intrusion, and which also incorporates a concealed water resistive barrier over which drainage will occur.

3.2.7 *expansion joint*, *n*—a joint that accommodates movement beyond plaster shrinkage and curing.

NOTE 1—For design consideration of control and expansion joints, see Annex A2.3.1.2 of Specification C926.

3.2.8 *framing member*, *n*—studs, joist, runners (track), bridging, bracing, and related accessories manufactured or supplied in wood or light gauge steel.

3.2.9 *hangers*, *n*—wires or steel rods or straps used to support main runners for suspended ceilings beneath floor or roof constructions.

3.2.10 *inserts*, *n*—devices embedded in concrete structural members to provide a loop or opening for attachment of hangers.

3.2.11 *saddle tie*, *n*—see Figs. 1 and 2.

3.2.12 *self-furring*, *adj*—a metal plaster base manufactured with evenly-spaced indentations that hold the body of the lath approximately ¼ in. (6.4 mm) away from solid surfaces to which it is applied.

3.2.13 *water barrier*, *n*—a material that prevents the infiltration of liquid moisture through the building enclosure system.

3.2.14 *water barrier system*, *n*—a combination of water barrier assemblies that prevent the infiltration of liquid moisture through the building enclosure system and facilitates its gravitational flow to a collection or exhaust location.

4. Delivery of Materials

4.1 All materials shall be delivered in the original packages, containers, or bundles bearing the brand-name and manufacturer's (or supplier's) identification.

5. Storage of Materials

5.1 All materials shall be kept dry. Materials shall be stacked off the ground, supported on a level platform, and protected from the weather and surface contamination.

5.2 Materials shall be neatly stacked with care taken to avoid damage to edges, ends, or surfaces.

5.3 Paper backed metal plaster bases shall be handled carefully in delivery, storage, and erection to prevent puncturing or removal of paper.

6. Materials

6.1 *Metal Plaster Bases*:

6.1.1 *Expanded Metal Lath*—Specification C847, galvanized.

6.1.2 *Wire Laths*:

6.1.2.1 *Welded Wire Lath*—Specification C933.

6.1.2.2 *Woven Wire Lath*—Specification C1032.

6.1.2.3 *Paper Backed Plaster Bases*—Specification C847.

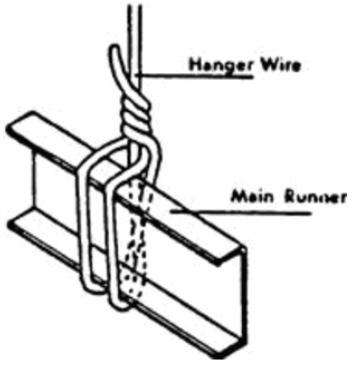


FIG. 1 Saddle Tie

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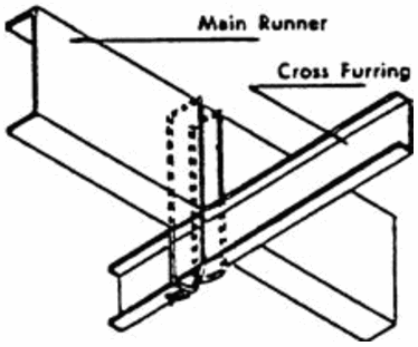


FIG. 2 Saddle Tie

6.2 *Accessories*:

6.2.1 *General*—All accessories shall have perforated or expanded flanges or clips shaped to permit complete embedment in the plaster, to provide means for accurate alignment, and to secure attachment of the accessory to the underlying surface. Accessories shall be designed to receive application of the specified plaster thickness.

6.2.2 Accessories shall be fabricated from Zinc Alloy (99 % pure zinc), galvanized (zinc coated) steel, rigid PVC or CPVC plastic, or anodized aluminum alloy. See Specification B221. (See Table 1 for minimum allowable thicknesses).

NOTE 2—The selection of an appropriate type of material for accessories shall be determined by applicable surrounding climatic and environmental conditions specific to the project location, such as salt air, industrial pollution, high moisture, or humidity.

6.2.3 *Steel*—Specification A653/A653M and shall have a G60 coating.

6.2.4 *PVC Plastic*—Specification D1784 or D4216.

6.2.5 *Zinc Alloy*—Specification B69, 99 % pure zinc.

6.2.6 Thickness of base material shall be as shown in Table 1.

6.2.7 *Cornerite*—1.75 lb/yd^2(0.059 kg/m^2), galvanized expanded metal lath, galvanized, 1.7 lb/yd^2(0.057 kg/m^2) galvanized woven or welded wire fabric of 0.0410 in. (1.04 mm) wire. When shaped for angle reinforcing, it shall have outstanding flanges (legs) of not less than 2 in. (51 mm).

6.3 *Channels*—Shall be cold-formed from steel with minimum 33 000 psi (228 MPa) yield strength and 0.0538 in. (1.37 mm) minimum bare steel thickness. Channel shall have a protective coating conforming to Specification A653/A653M-G60, or have a protective coating with an equivalent corrosion resistance for exterior applications, or shall be coated with a rust inhibitive paint, for interior applications, and shall have the following minimum weights in pounds per 1000 linear feet (kg/m).

Sizes, in. (mm)	Weight, lb/1000 ft (kg/m)	Flange Width, in. (mm)
¾ (19)	277 (0.412)	½ (13)
1½ (38)	414 (0.616)	½ (13)
2 (51)	506 (0.753)	½ (13)
2½ (64)	597 (0.888)	½ (13)

NOTE 3—Channels used in areas subject to corrosive action of salt air shall be hot-dipped galvanized, G60 coating.

6.3.1 *External Corner Reinforcement* —Expanded lath, welded wire, or woven wire mesh bent to approximately 90° used to reinforce portland cement stucco at external corners. This accessory shall be fully embedded in the stucco.

6.3.2 *Weep Screed*—Accessory used to terminate portland cement based stucco at the bottom of exterior framed walls. This accessory shall have a sloped, solid, or perforated, ground or screed flange to facilitate the removal of moisture from the wall cavity and a vertical attachment flange not less than 3½ in. (89 mm) long.

6.4 *Wire*—As specified in Specification A641/A641M with a Class I zinc coated (galvanized), soft temper steel. Wire diameters (uncoated) specified herein correspond with United States Steel Wire Gauge numbers as follows:

TABLE 1 Minimum Thickness of Accessories

Accessory	Base Material, in. (mm)		
	Steel	Zinc Alloy	P.V.C.
Corner Beads	0.0172(0.44)	0.0207(0.53)	0.035(0.89)
Casing Beads	0.0172(0.44)	0.0207(0.53)	0.035(0.89)
Weep Screeds	0.0172(0.44)	0.0207(0.53)	0.050(1.27)
Control Joints	0.0172(0.44)	0.018(0.46)	0.050(1.27)

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Wire Gauge (US Steel Wire Gauge)	Diameter (in.)	mm
No. 20	0.0348	.88
No. 19	0.0410	1.04
No. 18	0.0475	1.21
No. 17	0.0540	1.37
No. 16	0.0625	1.59
No. 14	0.0800	2.03
No. 13	0.0915	2.32
No. 12	0.1055	2.68
No. 11	0.1205	3.06
No. 10	0.1350	3.43
No. 9	0.1483	3.77
No. 8	0.1620	4.12

6.5 *Rod and Strap Hangers*—Mild steel, zinc or cadmium plated, or protected with a rust-inhibiting paint.

6.6 *Clips*—Form from steel wire, Specification A641/A641M zinc-coated (galvanized), Specification A641/A641M or steel sheet, Specification A653/A653M, depending on use and manufacturer's requirements.

6.7 *Fasteners*:

6.7.1 *Nails*—For attaching metal plaster bases to wood supports, 0.1205-in. 11 gauge (3.06-mm) diameter, 7⁄16-in. (11.1-mm) head, barbed, galvanized roofing nails or galvanized common nails.

6.7.1.1 Nails for attaching metal plaster bases to solid substrates shall be not less than 3⁄4 in. (19 mm) long.

6.7.2 Screws for attaching metal plaster base shall be fabricated in accordance with either Specification C954 or C1002 and shall have a 7⁄16 in. (11.1 mm) diameter pan wafer head and a 0.120 in. (3.0 mm) diameter shank. Screws used for attachment to metal framing members shall be self-drilling and self-tapping. Screws used for attachment to wood framing members shall be sharp-point.

7. Installation

7.1 *Workmanship*—Metal furring and lathing shall be erected so that the finished plaster surfaces are true to line (allowable tolerance of 1⁄4 in. [6.4 mm] in 10 ft [3.05 m]), level, plumb, square, or curved as required to receive the specified plaster thickness.

7.2 *Hangers and Inserts*:

7.2.1 Hangers shall be of ample length and shall conform to the requirements of Table 2 both as to size and maximum area to be supported, except as modified in this section.

7.2.2 When 1 by 3⁄16-in. (25 by 4.8-mm) flat inserts and hangers are used, 7⁄16-in. (11.1-mm) diameter holes shall be provided on the center line at the lower end of the insert and upper end of the hanger to permit the attachment of the hanger to the insert. The edge of the holes in both the inserts and the hangers shall be not less than 3⁄8 in. (9.5 mm) from the ends.

7.2.3 In concrete, hangers shall be attached to inserts embedded in the concrete or to other attachment devices designed for this purpose and able to develop full strength of the hanger.

7.2.4 Flat, steel hangers shall be bolted to 1 by 3⁄16-in. (25 by 4.8-mm) inserts with 3⁄8-in. (9.5-mm) diameter round-head stove bolts. (See Fig. 3.)

7.2.5 The nuts of the bolts shall be drawn up tight.

NOTE 4—Hangers required to withstand upward wind pressures shall be of a type to resist compression. Struts of formed channels shall be permitted.

7.3 *Installation of Hangers for Suspended Ceilings Under Wood Constructions*—Hangers shall be attached to supports by any of the following methods:

7.3.1 A hole shall be drilled through the wood member not less than 3 in. (76 mm) above the bottom with the upper end of the wire hanger passed through the hole and twisted three times around itself. See Fig. 4.

7.3.2 Three 12d nails shall be driven, on a downward slant, into the sides of the wood member with not less than 1 1⁄4 in. (31.8 mm) penetration and not less than 5 in. (127 mm) from the bottom edges, and not more than 36 in. (914 mm) on the center with the upper end of the wire hanger wrapped around the nails and twisted three times around itself. See Fig. 5.

7.3.3 A loop shall be formed in the upper end of the wire hanger and secured to the wood member by four 1 1⁄2-in. (38.1-mm), not less than 9 gauge, 0.1483-in. (3.77-mm) diameter wire staples driven horizontally or on a downward slant into the sides of the wood members, three near the upper end of the loop and the fourth to fasten the loose end. See Fig. 6.

7.3.4 Where supports for flooring are thicker than 1 1⁄2 in. (38.1 mm) and are spaced more than 4 ft (1.2 m) on center, 1 1⁄2 in. (38.1-mm) No. 1/0 (0.3065 in.) (7.78 mm) eye screws, or equivalent, spaced not more than 3 ft (0.9 m) on centers shall be screwed into the flooring supports with the upper end of the wire hanger inserted through the eye screws and twisted three times around itself.

7.3.5 Two holes shall be drilled in the upper end of the flat hangers and nailed to the sides of the wood members with 12d nails driven through the holes and clinched. Nails shall be not less than 3 in. (76 mm) above the bottom edge of the framing member. See Fig. 7.

7.4 *Attachment of Hangers to Main Runners*:

7.4.1 Wire hangers shall be saddle-tied to the runners. See Fig. 1.

7.4.2 Smooth or threaded rod hangers shall be fastened to the runners with special attachments appropriate to the design.

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TABLE 2 Allowable Support or Hanger Wire Spacing ft-in. (mm) and Cold-Rolled Channel Main Runner Spans, ft-in. (mm)[1-10]

NOTE—1 in. = 25.4 mm; 1 ft^2 = 0.093 m^2

Member Size, in. (mm)	Member Weight, lb/1000 ft (kg/m)	Span Conditions[9,10]	Uniform Load = 12 psf (0.479 kPa)				
			Member Spacing, in. (mm)				
			24 (610)	36 (914)	48 (1220)	60 (1520)	72 (1830)
			Allowable Hanger Wire or Support Spacing, ft-in. (mm)				
1½	414	Single	3-6 (1070)	3-1 (940)	2-9 (840)	2-9 (790)	2-5 (740)
(38.1)	(0.615)	2 or More	4-11 (1500)	4-2 (1270)	3-7 (1090)	3-2 (970)	2-11 (890)
2	506	Single	3-9 (1140)	3-3 (990)	3-0 (910)	2-9 (840)	2-8 (810)
(50.8)	(0.753)	2 or More	5-2 (1570)	4-6 (1370)	4-1 (1240)	3-10 (1170)	3-7 (1090)
2½	597	Single	3-11 (1190)	3-5 (1040)	3-2 (970)	2-11 (890)	2-9 (840)
(63.5)	(0.888)	2 or More	5-5 (1650)	4-9 (1450)	4-4 (1320)	4.0(1220)	3-10 (1170)
Member Size, in. (mm)	Member Weight, lb/1000 ft (kg/m)	Span Conditions[9,10]	Uniform Load = 15 psf (0.287 kPa)				
			Member Spacing, in. (mm)				
			24 (610)	36 (914)	48 (1220)	60 (1520)	72 (1830)
1½	414	Single	3-3 (990)	2-10 (860)	2-7 (790)	2-4 (710)	2-2 (660)
(38.1)	(0.616)	2 or More	4-6 (1370)	3-8 (1120)	3-2 (970)	2-10 (860)	2-7 (790)
2	506	Single	3-6 (1070)	3-1 (940)	2-10 (880)	2-7 (790)	2-5 (740)
(50.8)	(0.753)	2 or More	4-10 (1470)	4-3 (1300)	3-10 (1170)	3-6 (1070)	3-3 (990)
2½	597	Single	3-8 (1120)	3-3 (990)	2-11 (890)	2-9 (840)	2-7 (790)
(63.5)	(0.888)	2 or More	5-0 (1520)	4-5 (1350)	4-0 (1220)	3.9(1140)	3-6 (1070)

Allowable Spans Notes:
[1] Bare metal thickness of cold-rolled main runners shall be not less than 0.0538 in. (1.367 mm).
[2] Inside corner radii shall not be greater than ⅛ in. (3.19 mm).
[3] Spans based on upper flange of main runners laterally unbraced.
[4] Maximum deflection limited to 1/360 of the span length.
[5] Steel yield stress, Fy, shall be not less than 33 000 psi (228 MPa).
[6] Uniform load 12 psf (dry density) shall be used for portland cement plaster ceilings with plaster thicknesses up to ⅞ in. (22 mm) and 15 psf shall be used for ceilings with plaster thicknesses over ⅞ in. (22 mm) and not more than 1-¼ in. (32 mm).
[7] "2 or More" spans refers to two or more continuous, equal spans.
[8] For the "2 or More" span condition, listed spans represent the center-to-center distance between adjacent supports.
[9] These tables are designed for dead loads. Specific conditions such as exterior installations in high wind areas require additional engineering.
[10] Where uplift resistance is required for suspended ceilings to resist negative forces, the architect or engineer of record shall select the method to be used.

7.4.3 The lower ends of flat hangers shall be bolted to the main runners, or bent tightly around the runners and carried up and above the runners and bolt to the main part of the hanger. Bolts shall be ⅜-in. (9.5-mm) diameter, round-head stove bolts. See Fig. 3.

7.5 *Installation of Main Runners*:

7.5.1 Minimum sizes and maximum spans and spacings of main runners for the various spans between hangers or other supports shall be in accordance with the requirements of Table 2.

7.5.2 A clearance of not less than 1 in. (25 mm) shall be maintained between the ends of the main runners and the abutting masonry or the concrete walls, partitions, and columns. Where special conditions require that main runners let into abutting masonry or concrete construction, within such constructions maintain a clearance of not less than 1 in. (25 mm) from the ends and not less than ¼ in. (6.4 mm) from the tops and sides of the runners.

7.5.3 A main runner shall be located within 6 in. (152 mm) of the paralleling walls to support the ends of the cross furring. The ends of main runners shall be supported by hangers located not more than 6 in. (152 mm) from the ends.

7.5.4 Where main runners are spliced, the ends shall be overlapped not less than 12 in. (305 mm) with flanges of channels interlocked and securely tied near each end of the splice with double loops of 0.0625 in. (1.59 mm) or double loops of twin strands of 0.0475-in. (1.21-mm) galvanized wire. However, when the splice occurs at an expansion/control joint, the channel shall be nested and loosely tied to hold together but still allow movement.

7.5.5 Hanger wires shall hang straight down. If an obstacle prevents this, a trapeze type device shall be used to allow hanger wires to hang straight.

7.6 *Installation of Cross Furring*:

7.6.1 Minimum size and maximum spans and spacings of various types of cross furring for various spans between main runners and supports shall conform to the requirements of Table 2.

7.6.2 Cross furring shall be saddle-tied to main runners with 0.0625-in. 16 gauge (1.59-mm) galvanized wire, or a double strand of 0.0475-in. 18 gauge (1.21-mm) galvanized wire or with special galvanized clips, or equivalent attachments. (See Fig. 2.)

7.6.3 Where cross furring members are spliced, the ends shall be overlapped not less than 8 in. (203 mm), with flanges of channels interlocked, and securely tied near each end of the splice with double loops of 0.0625-in. 16 gauge (1.59-mm) galvanized wire or twin strands of 0.0475-in. 18 gauge (1.21-mm) galvanized wire.

7.6.4 Cross furring shall not come into contact with abutting masonry or reinforced concrete walls or partitions except, where

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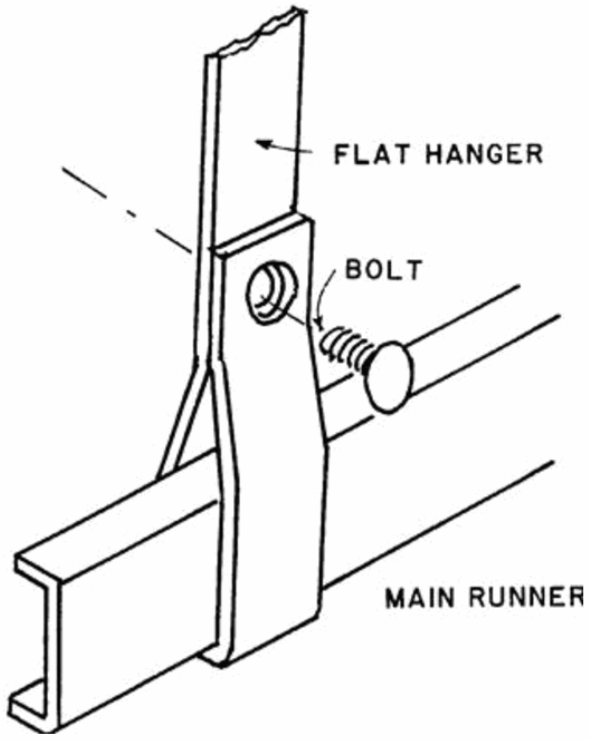


FIG. 3 Flat Hanger Attached to Main Runner Using Round-Head Stove Bolt

special conditions require that cross furring be let into abutting masonry or concrete construction, the applicable provisions of 7.5.2 shall apply.

7.6.5 Main runners and cross running shall be interrupted at control (expansion) joints. However, when the splice occurs at an expansion/control joint, the channel shall be nested and loosely tied to hold together but still allow movement.

7.7 *Metal Furring for Walls*:

7.7.1 Attachments for furring shall be concrete nails driven securely into concrete or into masonry joints, short pieces of ¾-in. (19.1-mm) channels used as anchors driven into masonry joints, or other devices specifically designed as spacer elements, spaced horizontally not more than 2 ft (0.6 m) on centers. They shall be spaced vertically in accordance with horizontal stiffener spacing so that they project from the face of the wall in order for ties to be made.

7.7.2 Horizontal stiffeners shall be not less than ¾ in. (19.5-mm) cold-rolled channels, spaced not to exceed 54 in. (1372 mm) on centers vertically, with the lower and upper channels not more than 6 in. (152 mm) from the ends of vertical members and not less than ¼ in. (6.4 mm) clear from the wall face, securely tied to attachments with three loops of galvanized, soft-annealed wire, or equivalent devices. Approved furring is not prohibited from use in this application.

7.7.3 Vertical members shall be not less than ¾ in. (19.5-mm) cold-rolled channels in accordance with the requirements of Table 3. Vertical members shall be saddle-tied to horizontal stiffeners with three loops of 0.0475-in. (1.21-mm) galvanized soft-annealed wire, or equivalent devices, at each crossing, and securely anchored to the floor and ceiling constructions. Where furring is not in contact with the wall, channel braces shall be installed between horizontal stiffeners and the wall, spaced horizontally not more than 2 ft (600 mm) on centers.

7.7.4 Where dampproofing has been damaged during installation of attachments, the dampproofing shall be repaired with the same material before proceeding with the installation of the furring.

7.8 *Lapping of Metal Plaster Bases*:

7.8.1 Side laps of metal plaster bases shall be secured to framing members. They shall be tied between supports with 0.0475-in. (1.21-mm) wire at intervals not more than 9 in. (229 mm).

7.8.2 Metal lath shall be lapped ½ in. (12.7 mm) at the sides, or nest the edge ribs. Wire lath shall be lapped one mesh at the sides and the ends. Lap metal lath 1 in. (25 mm) at ends. Where end laps occur between the framing members, the ends of the sheets of all metal plaster bases shall be laced or wire tied with 0.0475-in. (1.21-mm) galvanized, annealed steel wire.

7.8.3 Where metal plaster base with backing is used, the vertical and horizontal lap joints shall be backing on backing and metal on metal.

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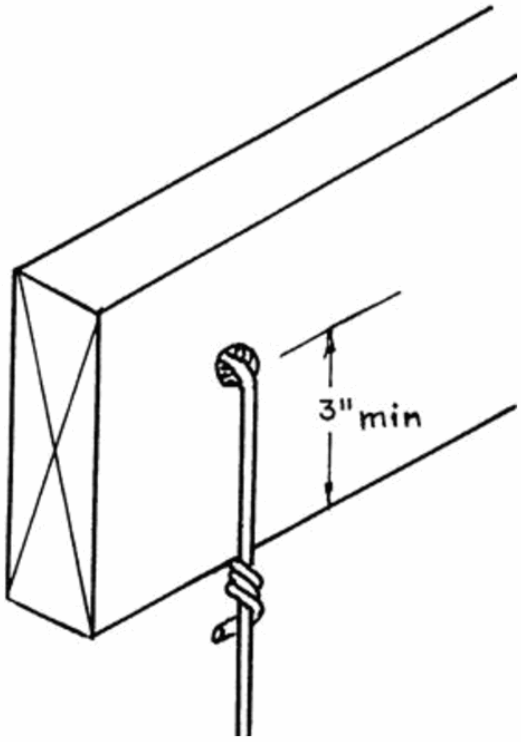


FIG. 4 Hanger Attached to Support Through a Drilled Hole

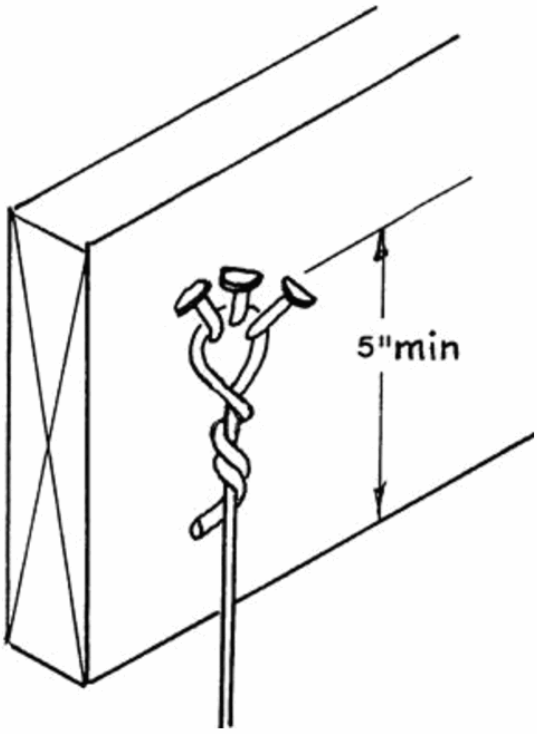


FIG. 5 Hanger Attached to Support Using Nails

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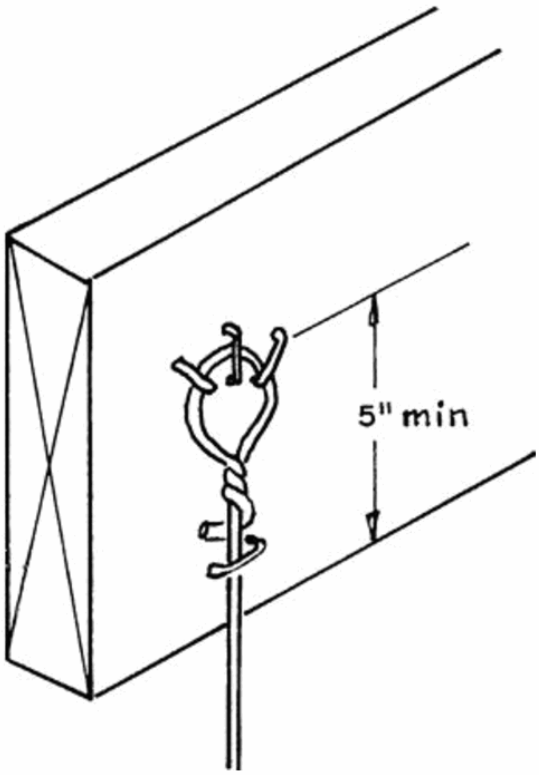


FIG. 6 Hanger Attached to Support Using Staples

7.8.3.1 Backing shall be lapped not less than 2 in. (50 mm). On walls, the backing shall be lapped so water will flow to the exterior. Backing shall not be placed between plaster base (lath) and flanges of accessories. Metal lath to metal flange contact shall be required to ensure that flanges are mechanically locked together.

7.9 *Spacing of Attachments for Metal Plaster Bases*—Attachments for securing metal plaster bases to framing members shall be spaced not more than 7 in. (178 mm) apart for diamond mesh and flat rib laths and at each rib for $\frac{3}{8}$ in. (9.5-mm) rib lath.

7.10 *Application of Metal Plaster Bases*:

7.10.1 *General*:

7.10.1.1Metal7.10.1.1 Metal plaster bases shall be furred away from vertical supports or solid surfaces at least $\frac{1}{4}$ in. Self furring lath meets furring requirements; except, furring of expanded metal lath is not required on supports having a bearing surface of $1\frac{5}{8}$ in. or less.

7.10.1.2 The spacing of framing members for the type and weight of metal plaster base used shall conform to the requirements of Table 3. Metal plaster bases shall be attached to framing members at not more than 7 in. (178 mm) on center, along framing members except for $\frac{3}{8}$-in. (9.5-mm) rib metal lath that shall be attached at each rib. Attachment penetrations between the framing members shall be avoided (see A1.1).

7.10.1.3 Lath shall be applied with the long dimension at right angles to the supports, unless otherwise specified.

7.10.1.4 Ends of adjoining plaster bases shall be staggered.

7.10.1.5 Lath shall not be continuous through control joints but shall be stopped and tied at each side.

7.10.1.6 Where furred or suspended ceilings butt into or are penetrated by columns, walls, beams, or other elements, the edges and ends of the ceiling lath shall be terminated at the horizontal internal angles with a casing bead, control joint, or similar device designed to keep the edges and ends of the ceiling lath and plaster free of the adjoining vertically oriented, or penetrating elements. Cornerite shall not be used at these locations. A clearance of not less than $\frac{3}{8}$ in. (9.5 mm) shall be maintained between the bead and all such elements.

7.10.1.7 Where load bearing walls or partitions butt into structural walls, columns, or floor or roof slabs, the sides or ends of the wall or partition lath shall be terminated at the internal angles with a casing bead, expansion/control joint, or similar device designed to keep the sides and ends of the wall or partition lath free of the adjoining elements. Cornerite shall not be used at these internal angles. A clearance of not less than $\frac{3}{8}$ in. (9.5 mm) shall be maintained from all abutting walls, columns, or other vertical elements.

7.10.2 *Attachments for Metal Plaster Bases to Wood Framing Members*:

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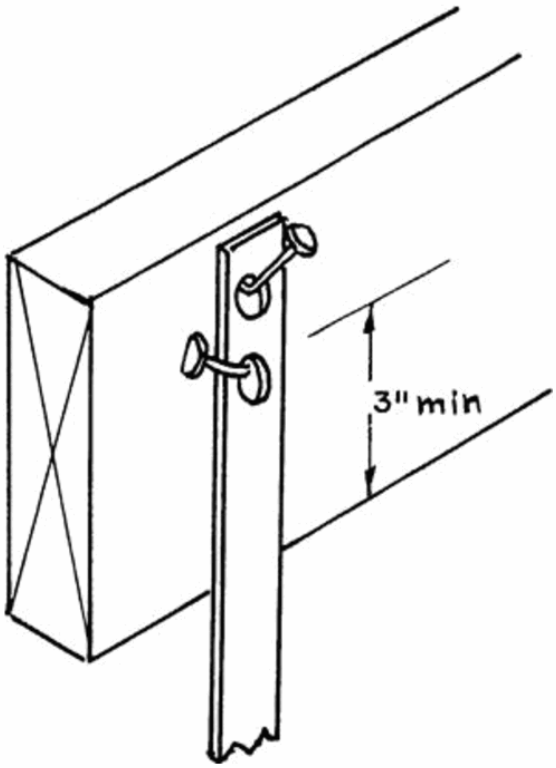


FIG. 7 Flat Hanger Attached to Support Using Nails

TABLE 3 Types and Weights of Metal Plaster Bases and Corresponding Maximum Permissible Spacing of Supports

Type of Metal Plaster Base	Minimum Weight of Metal Plaster Base, lb/yd^2(kg/m^2)	Maximum Permissible Spacing of Supports Center to Center, in. (mm)				
		Walls (Partitions)			Ceilings	
		Wood Studs or Furring	Solid Partitions[A]	Steel Studs or Furring	Wood or Concrete	Metal
U.S. Nominel Weights:						
Diamond Mesh[B]	2.5(1.4)	16(406)[C]	16(406)	16(406)[C]	12(305)	12(305)
	3.4(1.8)	16(406)[C]	16(406)	16(406)[C]	16(406)	16(406)
Flat Rib	2.75(1.5)	16(406)	16(406)	16(406)	16(406)	16(406)
	3.4(1.8)	19(482)	24(610)	19(482)	19(482)	19(482)
Flat Rib (large opening)	1.8(0.95)	24(610)	24(610)	24(610)	16(406)	16(406)
⅜ in. Rib	3.4(1.8)	24(610)	N/A[D]	24(610)	24(610)	24(610)
	4.0(2.1)	24(610)	N/A	24(610)	24(610)	24(610)
¾ in. Rib	5.4(2.9)	24(610)	N/A	24(610)	36(914)	36(914)
Welded Wire[B]	1.14(0.62)	16(406)	16(406)	16(406)	16(406)	16(406)
	1.95(1.1)	24(610)	24(610)	24(610)	24(610)	24(610)
Woven Wire[B]	1.4(0.6)	24(610)	16(406)	16(406)	24(610)	16(406)
Canadian Nominel Weights:						
Diamond Mesh[B]	2.5(1.4)	16(406)	12(305)	12(305)	12(305)	12(305)
	3.0(1.6)	16(406)	12(305)	12(305)	12(305)	12(305)
	3.4(1.8)	16(406)	16(406)	16(406)	16(406)	16(406)
Flat Rib	2.5(1.4)	16(406)	12(305)	12(305)	12(305)	12(305)
	3.0(1.6)	16(406)	16(406)	16(406)	16(406)	13½ (343)
⅜ in. Rib	3.0(1.6)	19(482)	N/A	16(406)	16(406)	16(406)
	3.5(1.9)	24(610)	N/A	19(482)	19(482)	19(482)
	4.0(2.1)	24(610)	N/A	24(610)	24(610)	24(610)

[A] Where plywood is used for sheathing, a minimum of ⅛ in. (3.2 mm) separation shall be provided between adjoining sheets to allow for expansion.
[B] Metal plaster bases shall be furred away from vertical supports or solid surfaces at least ¼ in. Self-furring lath meets furring requirements; except, furring of expanded metal lath is not required on supports having a bearing surface of 1⅝ in. or less.
[C] These spacings are based on unsheathed walls. Where self-furring lath is placed over sheathing or a solid surface, the permissible spacing of supports shall be no more than 24 in. (610 mm).
[D] Not applicable.

7.10.2.1 Lath shall be attached to framing members with attachments spaced not more than 7 in. (178 mm) on centers along supports.

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TABLE 4 Spans and Spacing of Cold-Rolled Channel Cross-Furring Members[A, B, C, D, E, F]

Design Load, 12 psf (575 Pa)		Allowable Span, Main Runners or Supports Ft-in. (mm)	
Member Depth	Spacing, in. (mm)	Simple Span	Two or More Spans[G,H]
¾ (19)	13.5 (343)	2-9 (840)	3-5 (1040)
	16 (406)	2-7 (790)	3-3 (990)
	19 (483)	2-7 (740)	3-0 (910)
	24 (610)	2-3 (690)	2-10 (860)
1½ (38)	13.5 (343)	4-6 (1370)	5-8 (1730)
	16 (406)	4-3 (1300)	5-5 (1650)
	19 (483)	4-0 (1220)	5-1 (1550)
	24 (610)	3-8 (1120)	4-9 (1450)

[A] Bare metal thickness of cold-rolled members shall not be less than 0.0538 in. (1.367 mm).
[B] Inside corner radii shall not be greater than ⅛ in. (3.17 mm).
[C] Spans based on upper flange of cross-furring laterally unbraced.
[D] Maximum deflection limited to 1/360th of span length unbraced.
[E] Steel yield stress, *Fy*, shall not be less than 33 000 psi (228 MPa).
[F] Tabulated spans apply only to cross-furring with webs oriented vertically.
[G] "Two or more" spans refers to two or more continuous, equal spans.
[H] For the "two or more" span conditions, listed spans represent the center-to-center distance between adjacent supports.

7.10.2.2 Diamond-mesh expanded metal lath, flat-rib expanded metal lath, and wire lath shall be attached to horizontal wood framing members with 1½-in. (38.1-mm) roofing nails driven flush with the plaster base and attached to vertical wood framing members with 6d common nails, or 1-in. (25-mm) roofing nails driven to a penetration of not less than ¾ in. (19.1 mm), or 1-in. (25-mm) wire staples driven flush with the plaster base. Staples shall have crowns not less than ¾ in. (19.05 mm) and shall engage not less than three strands of lath and penetrate the wood framing members not less than ¾ in. (19.05 mm). When metal lath is applied over sheathing, use fasteners that will penetrate the structural members not less than ¾ in. (19 mm).

7.10.2.3 Expanded ⅜ in. (9.5 mm) rib lath shall be attached to horizontal and vertical wood framing members with nails or staples to provide not less than 1¾-in. (44.5-mm) penetration into horizontal wood framing members, and ¾-in. (19.1-mm) penetration into vertical wood framing members.

7.10.2.4 Common nails shall be bent over to engage not less than three strands of lath, or be bent over a rib when rib lath is installed.

7.10.2.5 Screws used to attach metal plaster base to horizontal and vertical wood framing members shall penetrate not less than ⅝ in. (15.9 mm) into the member when the lath is installed and shall engage not less than three strands of lath. When installing rib lath, the screw shall pass through, but not deform, the rib.

7.10.3 *Attachments for Metal Plaster Bases to Metal Framing Members*:

7.10.3.1 Except as described in 7.10.3.2, all metal plaster bases shall be securely attached to metal framing members with 0.0475-in. 18 gauge (1.21-mm) wire ties, clips or by other means of attachment which afford carrying strength and resistance to corrosion equal to or superior to that of the wire.

7.10.3.2 Rib metal lath shall be attached to open-web steel joists by single ties of galvanized, annealed steel wire, not less than 0.0475 in. (1.21 mm), with the ends of each tie twisted together 1½ times.

7.10.3.3 Screws used to attach metal plaster base to metal framing members shall project not less than ⅜ in. (9.5 mm) through the metal framing member when the lath is installed and shall engage not less than three strands of lath. When installing rib lath, the screw shall pass through, but not deform, the rib.

7.10.4 *Attachments for Metal Plaster Bases to Concrete Joists*—Rib metal lath shall be attached to concrete joists by loops of 0.0800-in. (2.03-mm) galvanized, annealed steel wire, with the ends of each loop twisted together.

7.10.5 Metal plaster bases shall be attached to masonry or concrete with power or powder actuated fasteners or a combination of power or powder actuated fasteners and hardened concrete stub nails. One power or powder actuated fastener shall be located at each corner and one at the mid point of the long dimension adjacent to the edge of the metal plaster base sheet. The balance of the sheet shall be fastened with power or powder actuated fasteners or hardened concrete stub nails. The fasteners shall be installed in rows not more than 16 in. (406 mm) on center and spaced vertically along each row not more 7 in. (178 mm) on center. All fasteners shall be corrosion resistant and shall be not less than ¾ in. (19 mm) long, with heads not less than ⅜ in. (9.5 mm) wide.

7.11 *Application of Accessories* :

7.11.1 *General*—All metal accessories shall be installed in such a manner than flanges and clips provided for their attachment are completely embedded in the plaster.

7.11.1.1 Accessories shall be attached to substrate in such a manner as to ensure proper alignment during application of plaster. Flanges of accessories shall be secured at not more than 7 in. (178 mm) intervals along supports.

7.11.2 *Corner Beads*—Corner beads shall be installed to protect all external corners and to establish grounds.

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7.11.2.1 *External Corner Reinforcement* —External corner reinforcement shall be installed to reinforce all external corners where corner bead is not used. Where no external corner reinforcement or corner bead is used, lath shall be furred out and carried around corners not less than one support on frame construction.

7.11.3 *Casing Beads*—Nonload-bearing members shall be isolated from load-bearing members, and all penetrating elements, with casing beads or other suitable means, to avoid transfer of structural loads, and to separate from dissimilar materials.

7.11.4 *Control Joints-General*—Control joints shall be formed by using a single prefabricated member or fabricated by installing casing beads back to back with a flexible barrier membrane behind the casing beads. The separation spacing shall be not less than $\frac{1}{8}$ in. (3.2 mm) or as required by the anticipated thermal exposure range and shall be in conformance with 7.10.1.5.

7.11.4.1 *Control Joints*—Control (expansion and contraction) joints shall be installed in walls to delineate areas not more than 144 ft^2(13.4 m^2) and to delineate areas not more than 100 ft^2(9.30 m^2) for all horizontal applications, that is, ceilings, curves, or angle type structures.

7.11.4.2 The distance between control joints shall not exceed 18 ft (5.5 m) in either direction or a length-to-width ratio of $2\frac{1}{2}$ to 1. A control joint shall be installed where the ceiling framing or furring changes direction.

7.11.4.3 A control joint shall be installed where an expansion joint occurs in the base exterior wall.

7.11.4.4 Wall or partition height door frames shall be considered as control joints.

7.11.5 *Foundation Weep Screed*—Foundation weep screed shall be installed at the bottom of all steel or wood framed exterior walls to receive lath and plaster. Place the bottom edge of the foundation weep screed not less than 1 in. (25 mm) below the joint formed by the foundation and framing. The nose of the screed shall be placed not less than 4 in. (102 mm) above raw earth or 2 in. (51 mm) above paved surfaces. The weather resistive barrier and lath shall entirely cover the vertical attachment flange and terminate at the top edge of the nose or ground flange.

8. Keywords

8.1 ceiling; expansion control joints; lath; plaster; screed; suspended ceiling; walls

ANNEX

(Mandatory Information)

A1. GENERAL INFORMATION

A1.1 All wood-based sheathing shall be installed with a minimum $\frac{1}{8}$-in. (3.2-mm) gap around all panel edges and between openings for doors and windows.

NOTE A1.1—This $\frac{1}{8}$-in. (3.2-mm) gap is intended to accommodate expansion. Linear expansion that is not accommodated by an expansion gap can cause stress on the stucco membrane resulting in stucco cracks.

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A1.2 **Expansion Joints** shall be used to accommodate some degree of movement in the stucco membrane caused by movement of the building or its components to minimize damage to the stucco and weather resistive barrier. **Control Joints** shall be installed to minimize stress due to stucco curing and drying shrinkage and minor movement, along predetermined, usually straight lines and as a screed to aid in stucco thickness control.

SUMMARY OF CHANGES

Committee C11 has identified the location of selected changes to this specification since the last issue, C1063 - 11ab, that may impact the use of this specification. (Approved Dec. 1, 2011)April 15, 2012.)

(*1*)~~Added 7.10.1.1 and renumbered subsequent sections.~~) Revised 7.10.1.2 and added the term *water barrier* to the terminology section.

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Designation: C90 11b

Standard Specification for Loadbearing Concrete Masonry Units'

This standard is issued under the fixed designation C90; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (e) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This specification covers hollow and solid (see 5.3 and 5.4) concrete masonry units made from hydraulic cement, water, and mineral aggregates with or without the inclusion of other materials. There are three classes of concrete masonry units: (1) normal weight, (2) medium weight, and (3) lightweight. These units are suitable for both loadbearing and nonloadbearing applications.

1.2 Concrete masonry units covered by this specification are made from lightweight or normal weight aggregates, or both.

1.3 The text of this specification references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

1.4 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

NoTn 1-When particular features are desired such as surface textures for appearance or bond, finish, color, or particular properties such as density classification, higher compressive strength, fire resistance, thermal performance or acoustical performance, these features should be specified separately by the purchaser. Suppliers should be consulted as to the availability of units having the desired features.

2. Referenced Documents

2.1 ASTM Standards:2

C33 Specification for Concrete Aggregates

C140 Test Methods for Sampling and Testing Concrete Masonry Units and Related Units

C150 Specification for Portland Cement

C331 Specification for Lightweight Aggregates for Concrete Masonry Units

C426 Test Method for Linear Drying Shrinkage of Concrete Masonry Units

C595 Specification for Blended Hydraulic Cements

C618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

C979 Specification for Pigments for Integrally Colored Concrete

C989 Specification for Slag Cement for Use in Concrete and Mortars

C1157 Performance Specification for Hydraulic Cement

C1232 Terminology of Masonry

C1240 Specification for Silica Fume Used in Cementitious Mixtures

C1314 Test Method for Compressive Strength of Masonry Prisms

E519 Test Method for Diagonal Tension (Shear) in Masonry Assemblages

E72 Test Methods of Conducting Strength Tests of Panels for Building Construction

3. Terminology

3.1 Terminology defined in Terminology C1232 shall apply for this specification.

4. Materials

4.1 Cementitious Materials-Materials shall conform to the following applicable specifications:

4.1.1 *Portland* Cement-Specification C150.

4.1.2 Modified Portland Cement-Portland cement conforming to Specification C150, modified as follows:

(1) Limestone-If calcium carbonate is added to the cement, the CaCO3 content shall not be less than 85 %.

(2) Limitation on Insoluble Residue-1.5 %.

(3) Limitation on Air Content of Mortar-Volume percent, 22 % max.

(4) Limitation on Loss on Ignition-7 %.

4.1.3 *Blended Hydraulic* Cements-Specification C595.

4.1.4 Hydraulic Cement-Specification C 1157.

4.1.5 Pozzolans-Specification C61 8.

' This specification is under the jurisdiction of ASTM Committee Cl 15 on Manufactured Masonry Units and is the direct responsibility of Subcommittee 015.03 on Concrete Masonry Units and Related Units.

Current edition approved Dec. 15, 2011. Published January 2012. Originally approved in 1931. Last previous edition approved in 2011 as C90 11a. DOI: 10.1520/00090-11B.

Z For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

*A Summary of Changes section appears at the end of this standard.

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4.1.6 *Blast Furnace Slag* Cement-Specification C989.

4.1.7 Silica Fume-Specification C1240.

4.2 Aggregates-Aggregates shall conform to the following specifications, except that grading requirements shall not necessarily apply:

4.2.1 Normal Weight Aggregates-Specification C33.

4.2.2 Lightweight Aggregates-Specification C33 1.

4.3 Pigments for Integrally Colored Concrete- Specification C979.

4.4 Other Constituents-Air-entraining agents, integral water repellents, and other constituents shall be previously established as suitable for use in concrete masonry units and shall conform to applicable ASTM standards or shall be shown by test or experience not to be detrimental to the durability of the concrete masonry units or any material customarily used in masonry construction.

5. Physical Requirements

5.1 At the time of delivery to the purchaser, units shall conform to the physical requirements prescribed in Table I and Table 2. All units shall be sound and free of cracks or other defects that interfere with the proper placement of the unit or significantly impair the strength or permanence of the construction. Minor cracks, incidental to the usual method of manufacture or minor chipping resulting from customary methods of handling in shipment and delivery, are not grounds for rejection.

NOTE 2-Higher compressive strengths than those listed in Table 2 may be specified where required by design. Consult with suppliers to determine availability of units of higher compressive strength.

NOTE 3-Oven-dry densities of concrete masonry units generally fall within the range of 85 to 145 lbf/ft3 (1360 to 2320 kg/m3). Because available densities will vary, suppliers should be consulted before specifying project requirements.

5.1.1 When higher compressive strengths than those listed in Table 2 are specified, the tested average net area compressive strength of three units shall equal or exceed the specified compressive strength, and the tested individual unit net area compressive strength of all three units shall exceed 90 % of the specified compressive strength.

5.2 At the time of delivery to the purchaser, the linear shrinkage of units shall not exceed 0.065 %.

NOTE 4-The purchaser is the public body or authority, association, corporation, partnership, or individual entering into a contract or agreement to purchase or install, or both, concrete masonry units. The time of delivery to the purchaser is FOB plant when the purchaser or the purchaser's agent transports the concrete masonry units, or at the time unloaded at the worksite if the manufacturer or the manufacturer's agent transports the concrete masonry units.

5.3 *Hollow Units:*

5.3.1 Face shell thickness (tfs) and web thickness (tw) shall conform to the requirements prescribed in Table 1.

NOTE 5-Web thickness (tw) not conforming to the requirements prescribed in Table I may be approved, provided equivalent structural capability has been established when tested in accordance with the applicable provisions of Test Methods E72, C1314, E519, or other applicable tests and the appropriate design criteria developed is in accordance with applicable building codes.

5.4 Solid Units:

5.4.1 The net cross-sectional area of solid units in every plane parallel to the bearing surface shall be not less than 75 % of the gross cross-sectional area measured in the same plane.

5.5 *End Flanges:*

5.5.1 For units having end flanges, the thickness of each lfange shall not be less than the minimum face shell thickness.

NOTE 6-Flanges beveled at the ends for mortarless head joint applications that will be filled with grout are exempt from this requirement. Flanges which are specially shaped for mortarless head joint applications which have been shown by testing or field experience to provide equivalent performance are exempt from this requirement.

6. Permissible Variations in Dimensions

6.1 *Standard Units-For* standard units, no overall dimension (width, height, and length) shall differ by more than ±1/s in. (3.2 mm) from the specified dimensions.

6.2 Particular Feature Units-For particular feature units, dimensions shall be in accordance with the following:

6.2.1 For molded face units, no overall dimension (width, height, and length) shall differ by more than -±'/s in. (3.2 mm) from the specified standard dimension. Dimensions of molded features shall be within ±1A6 in. (1.6 mm) of the specified standard dimensions and shall be within ±1/16 in. (1.6 mm) of the specified placement of the molded feature.

NOTE 7-Molded features include, but are not limited to: ribs, scores, hex-shapes, and patterns.

6.2.2

For split-faced units, all non-split overall dimensions shall differ by not more than +1/8 in. (3.2 mm) from the specified standard dimensions.

6.2.3 For slump units, no overall height dimension shall differ by more than ±1/s in. (3.2 mm) from the specified standard dimension.

TABLE 1 Minimum Face Shells and Web Requirements"

Nominal Width (W) of Units, in. (mm)	Face Shell Thickness (ts), min, in. (mm)8•c	Webs	
		Web Thickness° (t_w), min, in. (mm)	Normalized Web Area (A_w), min in.2/ft2 (mm2/m2)°
3 (76.2) and 4 (102)	3/a (19)	a /4 (19)	6.5 (45,140)
6 (152)		3/4 (19)	6.5 (45,140)
8 (203) and greater	1%( ) (32	/4 (19)	6.5 (45,140)

A e Average of measurements on a minimum of 3 units wh en measured as described in Test Methods C140.

When this standard is used for units having split surfaces, a maximum of 10 % of the split surface is permitted to have thickness less than those shown, but not less than 3/4 in. (19.1 mm). When the units are to be solid grouted, the 10 % limit does not apply and Footnote C establishes a thickness requirement for the entire fecesheli.

When the units are to be solid grouted, minimum face shell and web thickness shall be not less than 1/13 in. (16 mm).

° M inimum normalized web area does not apply to the portion of the unit to be filled with grout. The length of that portion shall be deducted from the overall length of the unit for the calculation of the minimum web cross-sectional area.

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TABLE 2 Strength, Absorption, and Density Classification Requirements

Density Classification	Oven-Dry Density of Concrete, lb/ft3(kg/m3)	Maximum Water Absorption, lb/ft3(kg/m3)		Minimum Net Area Compressive Strength, lb/in2(MPa)	
	Average of 3 Units	Average of 3 Units	Individual Units	Average of 3 Units	Individual Units
Lightweight	Less than 105 (1680)	18 (288)	20 (320)	1900 (13.1)	1700 (11.7)
Medium Weight	105 to less than 125 (1680-2000)	15 (240)	17 (272)	1900 (13.1)	1700 (11.7)
Normal Weight	125 (2000) or more	13 (208)	15 (240)	1900 (13.1)	1700 (11.7)

NOTE 8-On faces that are split or slumped, overall dimensions will vary. Consult with suppliers to determine achievable dimensional tolerances for products including these features.

7. Finish and Appearance

7.1 Where units are to be used in exposed wall construction, the face or faces that are to be exposed shall not show chips or cracks, not otherwise permitted, or other imperfections when viewed from a distance of not less than 20 ft (6.1 m) under diffused lighting.

7.1.1 Five percent of a shipment containing chips, not larger than 1 in. (25.4 mm) in any dimension, or cracks not wider than 0.02 in. (0.5 mm) and not longer than 25 % of the nominal height of the unit, is permitted.

7.2 The color and texture of units shall be specified by the purchaser. The finished surfaces that will be exposed in place shall conform to an approved sample, consisting of not less than four units, representing the range of texture and color permitted.

NOTE 9-Concrete masonry units are produced using a wide variety of natural aggregates and other materials. As such, slight variations inherent from natural materials should be expected. Since specifying units and approving samples can take place several months prior to production of actual units for a project, slight variations in appearance from the approved sample are to be expected.

7.3 A shipment shall not contain more than 5 % of units, including broken units, that do not meet the requirements of 6.1, 7.1, and 7.1.1.

8. Sampling and Testing

8.1 The purchaser or authorized representative shall be accorded proper facilities to inspect and sample the units at the place of manufacture from the lots ready for delivery.

8.2 Sample and test units in accordance with Test Methods C140.

8.3 Total linear drying shrinkage shall be based on tests of concrete masonry units made with the same materials, concrete mix design, manufacturing process, and curing method, conducted in accordance with Test Method C426 and not more than 24 months prior to delivery.

9. Compliance

9.1 If a sample fails to conform to the specified requirements, the manufacturer shall be permitted to remove units from the shipment. A new sample shall be selected by the purchaser from remaining units from the shipment with a similar configuration and dimension and tested. If the second sample meets the specified requirements, the remaining portion of the shipment represented by the sample meets the specified requirements. If the second sample fails to meet the specified requirements, the remaining portion of the shipment represented by the sample fails to meet the specified requirements.

NOTE 10-Unless otherwise specified in the purchase order, the cost of tests is typically borne as follows: (1) if the results of the tests show that the units do not conform to the requirements of this specification, the cost is typically borne by the seller; (2) if the results of the tests show that the units conform to the specification requirements, the cost is typically borne by the purchaser.

10. Keywords

10.1 absorption; compressive strength; concrete masonry units; equivalent web thickness; face shell; flange; lightweight; linear drying shrinkage; loadbearing; medium weight; normal weight; webs

APPENDIXES

(Nonmandatory Information)

X1. WATER PENETRATION RESISTANCE

X1.1 Exterior walls are often subjected to moisture penetration from one or more sources. For example, basement walls may be exposed to water from saturated soil. Above-grade exterior walls are usually exposed to wind-driven rain. To prevent water penetration, proper detailing, construction, flashing, and drainage should be provided. Proper water penetration resistant treatments should be applied to the walls. While it is not within the scope of Specification C90 to include information on resistance to water penetration, such information and guidelines are available from other organizations.

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X2. CRACK CONTROL

X2.1 Restrained or differential movement in building elements and building materials can result in cracking. Some common causes of movement are: loads created by wind, soil pressure, seismic forces, or other external sources; settlement of foundations; or volume changes in materials. For example, volume changes in concrete masonry units can be caused by moisture gain and loss, thermal expansion and contraction, and carbonation. To limit and control cracking due to these and other causes, proper design, detailing, construction, and materials are necessary. Specification C90 provides a maximum limitation on the total linear drying shrinkage potential of the units, but it is not within the scope of this specification to address other design, detailing, construction, or material recommendations. This type of information and related guidelines for crack control are available from other organizations.

SUMMARY OF CHANGES

Committee C15 has identified the location of selected changes to this standard since the last issue (C90 11a) that may impact the use of this standard. (Approved Dec. 15, 2011.)

(1) References to Specifications C979 and C 1.240 have been added for pigments and silica fume, respectively.

(2) The minimum web thickness and equivalent web thickness requirements of Table 1 were revised.

Committee C15 has identified the location of selected changes to this standard since the last issue (C90 11) that may impact the use of this standard. (Approved June 1, 2011.)

(1) Added new Note 9.

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S6021 Requirements

Page: 1

Designation: C926 - 11a

Standard Specification for Application of Portland Cement-Based Plaster[1]

This standard is issued under the fixed designation C926; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This specification covers the requirements for the application of full thickness portland cement-based plaster for exterior (stucco) and interior work.

1.2 This specification sets forth tables for proportioning of various plaster mixes and plaster thickness.

NOTE 1—General information will be found in Annex A1. Design considerations will be found in Annex A2.

1.3 The values stated in inch-pound units are to be regarded as the standard. The SI (metric) values given in parentheses are approximate and are provided for information purposes only.

1.4 The text of this specification references notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the specification.

1.5 Details of construction for a specific assembly to achieve the required fire resistance shall be obtained from reports of fire-resistance tests, engineering evaluations, or listings from recognized fire testing laboratories.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C11 Terminology Relating to Gypsum and Related Building Materials and Systems
C25 Test Methods for Chemical Analysis of Limestone, Quicklime, and Hydrated Lime
C35 Specification for Inorganic Aggregates for Use in Gypsum Plaster
C91 Specification for Masonry Cement
C150 Specification for Portland Cement
C206 Specification for Finishing Hydrated Lime
C207 Specification for Hydrated Lime for Masonry Purposes
C219 Terminology Relating to Hydraulic Cement
C260 Specification for Air-Entraining Admixtures for Concrete
C595 Specification for Blended Hydraulic Cements
C631 Specification for Bonding Compounds for Interior Gypsum Plastering
C897 Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters
C932 Specification for Surface-Applied Bonding Compounds for Exterior Plastering
C1063 Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster
C1116 Specification for Fiber-Reinforced Concrete and Shotcrete
C1328 Specification for Plastic (Stucco) Cement
E90 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
E119 Test Methods for Fire Tests of Building Construction and Materials
E492 Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine

2.2 *ANSI Standard:*

A108.1 Specification for Installation of Ceramic Tile[3]

3. Terminology

3.1 Terms shall be defined as in Terminologies C11 and C219, except as modified herein.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *accelerator*—an admixture that will shorten the setting time of plaster.

3.2.2 *admixture*—a material other than water, aggregate, or basic cementitious material added to the batch before or during job mixing.

[1] This specification is under the jurisdiction of ASTM Committee C11 on Gypsum and Related Building Materials and Systems and is the direct responsibility of Subcommittee C11.03 on Specifications for the Application of Gypsum and Other Products in Assemblies.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

***A Summary of Changes section appears at the end of this standard.**

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3.2.3 *acid etching*—the cleansing and controlled erosion of a solid surface, using an acid wash.

3.2.4 *air entrainment*—the use of an air-entraining admixture or air-entraining cementitious material in a plaster mix to yield a controlled quantity of minute (typically between 10 and 1000 µm in diameter) disconnected air bubbles in the plaster (see *entrapped air*).

3.2.5 *backplaster*—plaster applied to the face of metal lath opposite a previously applied plaster.

3.2.6 *bond*—the state of adhesion between plaster coats or between plaster and plaster base.

3.2.7 *bonding compound or agent*—compounds surface applied or integrally mixed with plaster to improve the quality of bond between plaster and plaster base or between plaster coats.

3.2.8 *cementitious material*—a material that, when mixed with water and with or without aggregate, provides the plasticity and the cohesive and adhesive properties necessary for placement and the formation of a rigid mass.

3.2.9 *coat*—a thickness of plaster applied in a single operation.

3.2.9.1 *basecoat*—all plaster applied before the application of the finish coat.

3.2.9.2 *bedding coat*—a plaster coat that receives aggregate or other decorative material impinged into its surface before it sets.

3.2.9.3 *brown coat*—in three-coat work, the second coat, applied over the scratch coat. In two-coat work, brown coat refers to the double-up basecoat. In either use, the brown coat is the coat directly beneath the finish coat.

3.2.9.4 *dash-bond coat*—a thick wet mixture of portland cement and water, with or without aggregate, dashed onto the surface of a plaster base such as smooth monolithic concrete or concrete block surfaces to improve the mechanical key for subsequent plaster coats.

3.2.9.5 *double-up coat*—the brown-coat plaster applied to the scratch coat plaster before the scratch-coat plaster has set.

3.2.9.6 *finish coat*—the final layer of plaster applied over basecoat plaster.

3.2.9.7 *fog coat*—a light coat of cement and water, with or without aggregate or color pigment, applied by machine spray to improve color consistency.

3.2.9.8 *scratch coat*—the first coat of plaster applied to a plaster base.

3.2.9.9 *skim coat*—a thin finish coat applied to an existing plaster surface or other substrate to improve appearance.

3.2.9.10 *three-coat work*—application of plaster in three successive coats with time between coats for setting or drying, or both.

3.2.10 *cold joint ("joining" or "jointing")*—the juncture of fresh plaster application adjacent to set plaster, in the same plane.

3.2.11 *curing*—the act or processes of producing a moisture environment favorable to cement hydration, resulting in the setting or hardening of the plaster.

3.2.12 *entrapped air*—unintentional air voids in the plaster generally larger than 1 mm.

3.2.13 *factory prepared ("mill-mixed" or "ready mixed")*—pertaining to material combinations that have been formulated and dry-blended by the manufacturer, requiring only the addition of and mixing with water to produce plaster.

3.2.14 *fiber, natural or synthetic*—an elongated fiber or strand admixture added to plaster mix to improve cohesiveness or pumpability, or both.

3.2.15 *floating*—act of compacting and leveling brown-coat plaster to a reasonably true surface plane using a float tool or the act of bringing the aggregate to the surface of finish-coat plaster.

3.2.16 *key (also mechanical key)*—plaster that physically surrounds, penetrates, or deforms to lock onto the perforations or irregularities of the plaster base or previous coat of plaster.

3.2.17 *metal plaster base*—expanded metal lath, or welded or woven wire lath.

3.2.18 *plaster*—portland cement-based cementitious mixture (see *stucco*).

3.2.19 *required*—pertaining to a mandatory obligation imposed by a force outside of this specification, such as a building code, project specification, contract, or purchase order.

3.2.20 *rustication (also "break")*—an interruption or change in plane of a plastered surface.

3.2.21 *scoring (also known as "scratching")*—the grooving of the surface of an unset plaster coat to provide a key for a subsequent coat.

3.2.22 *set*—the chemical and physical change in plaster as it goes from a plastic, workable state to a rigid state.

3.2.23 *solid plaster bases, n*—substrates that do not require a metal plaster base, including cast in place and precast concrete, concrete and stone masonry, clay brick, and tile.

3.2.24 *stucco*—portland cement-based plaster used on exterior locations.

3.2.25 *stucco finish*—a factory-prepared, dry blend of materials for finish coat applications.

3.2.26 *temper, v*—to mix or restore unset plaster with water to a workable consistency.

3.2.27 *texture*—any surface appearance as contrasted to a smooth surface.

4. Materials

4.1 Materials shall conform to the requirements of the referenced specifications and standards and to the requirements specified herein.

4.2 *Cement*:

4.2.1 *Portland Cement*—Specification C150, Type I, II, and III, as specified. White where specified.

4.2.2 *Air-Entraining Portland Cement*—Specification C150, type as specified. White where specified.

4.2.3 *Masonry Cement*—Specification C91, Types N, S, and M. White where specified.

4.2.4 *Blended Hydraulic Cement*—Specification C595, Type IP, I(PM), IS, and I(SM) as specified.

4.2.5 *Air-Entraining Blended Hydraulic Cement*—Specification C595, Type IP-A, I(PM)-A, IS-A, and I(SM)-A as specified.

4.2.6 *Plastic Cement*—Plastic Cement shall meet the requirements of Specification C1328, Standard Specification for Plastic (Stucco) Cement.

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NOTE 2—Plastic cements are not available nationally.

4.3 *Type "S" Hydrated Lime*—A hydrated lime that contains not more than 8 % unhydrated oxides when tested in accordance with Test Methods C25. See Specifications C206 and C207 for a complete description of a Type "S" hydrated lime.

4.4 *Aggregates*:

4.4.1 *Sand for Base Coats*—Specification C897. Aggregate failing to meet gradation limits in Specification C897 shall be permitted to be used, provided the plaster made with this sand has an acceptable demonstrated performance record in similar construction and climate conditions.

4.4.2 *Perlite*—Specification C35.

4.4.3 *Sand for Job-Mixed Finish Coats*—Specification C897.

4.5 *Water*—Water used in mixing, application, and finishing of plaster shall be clean, fresh, suitable for domestic water consumption, and free of such amounts of mineral or organic substances as would affect the set, the plaster, or any metal in the system.

4.6 *Admixtures*—See 3.2.2 and A2.5.

4.7 *Fibers*—Specification C1116 on alkali-resistant fibers, glass fibers, nylon, polypropylene or carbon fibers.

5. Requirements for Bases to Receive Portland Cement-Based Plaster

5.1 Metal bases and accessories used to receive plaster shall be installed in conformance with Specification C1063, except as otherwise specified.

NOTE 3—All metal, or PVC, or CPVC plastic members should be free of deleterious amounts of rust, oil, or other foreign matter, which could cause bond failure or unsightly discoloration.

5.2 Surfaces of solid bases to receive plaster, such as masonry, stone, cast-in-place or precast concrete shall be straight and true within ¼ in. in 10 ft (2.1 mm/m) and shall be free of form oil or other elements, which would interfere with bonding. Conditions where the surfaces are out of tolerance shall be corrected prior to the application of the plaster. Form ties or other obstructions shall be removed or trimmed back even with the surface of the solid base.

5.2.1 Solid surfaces shall have the suction (ability to absorb water) or surface roughness, or both, to provide the bond required for the plaster.

5.2.2 Smooth or nonabsorbent solid surfaces, such as cast-in-place or precast concrete, shall be prepared to receive portland cement plaster by one of the following methods:

5.2.2.1 Sandblasting, wire brushing, acid etching, or chipping or a combination thereof,

5.2.2.2 Application of a dash-bond coat applied forcefully against the surface, left untroweled, undisturbed, and moist cured for at least 24 h, or

5.2.2.3 Application of a bonding compound suitable for exterior or interior exposure solid surfaces in accordance with the manufacturer's written directions.

5.2.3 Where bond cannot be obtained by one or more of the methods in 5.2.2, a furred or self-furring metal plaster base shall be installed in accordance with Specification C1063.

6. Plaster Proportions and Mixing

6.1 *Proportions*:

6.1.1 All portland cement plasters shall be mixed and proportioned in accordance with the following tables and accompanying requirements, using measuring devices of known volume with successive batches proportioned alike.

6.1.2 Plaster mix used shall be as designated and referenced to Table 1.

6.1.3 Base-coat proportions shall be as shown in Table 2 for the mix specified from Table 1.

6.1.3.1 *Measurement of Materials*—The method of measuring materials for the plaster shall be such that the specified proportions are controlled and accurately maintained. The weights per cubic foot of the materials are considered to be as follows:

Material	Weight, lb/ft^3(kg/m^3)
Portland cement	94 (1505)
Blended cement	Weight printed on bag
Masonry or plastic cement	Weight printed on bag
Hydrated Lime	40 (640)
Lime Putty	80 (1280)
Sand, Damp and Loose (6.1.3.2)	80 (1280) of dry sand

6.1.3.2 For purposes of this specification, a weight of 80 lb (1280 kg) of oven-dried sand shall be used. This is, in most cases, equivalent to one cubic foot of loose, damp sand.

6.1.4 Finish-coat proportions for job-mixed finish coats shall be as specified in Table 3.

6.1.5 *Factory-Prepared Finish Coats*—See 3.2.14.

6.1.6 Dash-bond coat proportions shall be 1 volume part portland cement and not more than 2 volume parts of aggregate mixed to a consistency that will permit application as specified in 7.1.5.

6.1.7 Admixtures shall be proportioned, mixed, and applied in accordance with the printed directions of the manufacturer. (See A2.5.)

6.2 *Mixing*:

6.2.1 All plaster shall be prepared in a mechanical mixer, using sufficient water to produce a workable consistency and uniform color. (See X1.1.)

6.2.2 Base-coat plasters that have stiffened because of evaporation of water shall be permitted to be tempered one

TABLE 1 Plaster Bases—Permissible Mixes

NOTE—See Table 2 for plaster mix symbols.

Property of Base	Mixes for Plaster Coats	
	First (Scratch)	Second (Brown)
Low absorption, such as dense, smooth clay tile, brick, or concrete	C	C, CL, M, or CM
	CM or MS	CM, MS, or M
	P	P
High Absorption, such as concrete masonry, absorptive brick, or tile	CL	CL
	M	M
	CM or MS	CM, MS, or M
	P	P
Metal plaster base	C	C, CL, M, CM, or MS
	CL	CL
	CM or MS	CM, MS, or M
	M	M
	CP	CP or P
	P	P

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TABLE 2 Base-Coat Proportions,[A] Parts by Volume[B]

Plaster Mix Symbols	Cementitious Materials					Volume of Aggregate per Sum of Separate Volumes of Cementitious Materials	
	Portland Cement or Blended Cement	Plastic Cement	Masonry Cement		Lime	1st Coat	2nd[C] Coat
			N	M or S			
C	1	...	...	...	0–¾	2½ –4	3–5
CL	1	...	...	...	¾ –1½	2½ –4	3–5
M	...	...	1	...	...	2½ –4	3–5
CM	1	...	1	...	...	2½ –4	3–5
MS	...	...	...	1	...	2½ –4	3–5
P	...	1	...	...	...	2½ –4	3–5
CP	1	1	...	...	...	2½ –4	3–5

[A] The mix proportions for plaster scratch and brown coats to receive ceramic tile shall be in accordance with the applicable requirements of ANSI A108.1 series applicable to specified method of setting time.
[B] Variations in lime, sand, and perlite contents are allowed due to variation in local sands and insulation and weight requirements. A higher lime content will generally support a higher aggregate content without loss of workability. The workability of the plaster mix will govern the amounts of lime, sand, or perlite.
[C] The same or greater sand proportion shall be used in the second coat than is used in the first coat.

TABLE 3 Job-Mixed Finish Coat Proportion Parts by Volume

Plaster Mix Symbols[A]	Cementitious Materials					Volume of Aggregate per Sum of Separate Volumes of Cementitious Materials[B]
	Portland Cement or Blended Cement	Plastic Cement	Masonry Cement[A]		Lime	
			N	M or S		
F	1	...	...	...	¾ –1½	1½ –3
FL	1	...	...	...	1½ –2	1½ –3
FM	...	...	1	...	...	1½ –3
FCM	1	...	1	...	...	1½ –3
FMS	...	...	...	1	...	1½ –3
FP	...	1	...	...	...	1½ –3

[A] Additional portland cement is not required when Type S or M masonry cement is used.
[B] In areas not subject to impact, perlite aggregate shall be permitted to be used over base-coat plaster containing perlite aggregate.

time only to restore the required consistency. Plaster not used within 1½ h from start of initial mixing shall be discarded.

NOTE 4—Severe hot, dry climate conditions accelerate the stiffening of plaster and require reduction of this limit. The use of cold waters will slow the stiffening process.

6.2.3 Finish-coat plaster shall not be tempered.

7. Application

7.1 *General*:

7.1.1 Portland cement plaster shall be applied by hand or machine to the nominal thickness specified in Table 4.

7.1.2 Plaster nominal thickness shall be measured from the back plane of the metal plaster base, exclusive of ribs or dimples, or from the face of the solid backing with or without metal plaster base, to the outer surface exclusive of texture variations.

7.1.3 Portland cement-based plaster shall be applied on furred metal plaster base when the surface of solid backing consists of gypsum board, gypsum plaster, wood, or rigid foam board-type products.

NOTE 5—On horizontal ceiling supports or roof soffits protected by a drip edge, gypsum board products shall be permitted to be used as backing

TABLE 4 Nominal Plaster Thickness[A] for Three- and Two-Coat Work, in. (mm)

BASE	Vertical				Horizontal			
	1st Coat	2nd Coat	3rd Coat[B]	Total	1st Coat	2nd Coat	3rd Coat[B]	Total
	Interior/Exterior							
Three-coat work:[C]								
Metal plaster base	⅜ (9.5)	⅜ (9.5)	⅛ (3)	⅞ (22)	¼ (6)	¼ (6)	⅛ (3)	⅝ (16)
Solid plaster base:								
Unit masonry	¼ (6)	¼ (6)	⅛ (3)	⅝ (16)		Use two-coat work		
Cast-in-place or precast concrete	¼ (6)	¼ (6)	⅛ (3)	⅝ (16)				⅜ (9.5), max
Metal plaster base over solid base	½ (12.5)	¼ (6)	⅛ (3)	⅞ (22)	½ (12.5)	¼ (6)	⅛ (3)	⅞ (22)
Two-coat work:								
Solid plaster base:								
Unit masonry	⅜ (9.5)	⅛ (3)		½ (12.5)				⅜ (9.5)
Cast-in-place or pre-cast concrete	¼ (6)	⅛ (3)		⅜ (9.5)				⅜ (9.5)

[A] Exclusive of texture.
[B] For solid plaster partitions, additional coats shall be applied to meet the finished thickness specified.
[C] For exposed aggregate finishes, the second (brown) coat shall become the "bedding" coat and shall be of sufficient thickness to receive and hold the aggregate.

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for metal base to receive portland cement plaster.

7.1.4 Separation shall be provided where plaster abuts dissimilar construction materials or openings. (See A2.1.4.)

7.1.5 Each plaster coat shall be applied to an entire wall or ceiling panel without interruption to avoid cold joints and abrupt changes in the uniform appearance of succeeding coats. Wet plaster shall abut set plaster at naturally occurring interruptions in the plane of the plaster, such as corner angles, rustications, openings, and control joints where this is possible. Joinings, where necessary, shall be cut square and straight and not less than 6 in. (152 mm) away from a joining in the preceding coat.

7.1.6 Metal plaster base shall be covered with three-coat work with or without solid backing. The combined total nominal thickness shall be as shown in Table 4. A dash-bond coat shall not replace one of the specified number of coats.

7.1.7 Two-coat work shall be used only over solid bases meeting the requirements of 5.2. The combined total nominal thickness shall be as shown in Table 4. A dash-bond coat shall not replace one of the specified number of coats.

7.1.8 Backplaster where required, shall be applied only after the coat on the opposite side has set sufficiently to resist breaking or cracking the plaster keys.

7.1.9 Each coat shall be permitted to set before the next coat is applied. (See X1.4.2.)

7.1.10 Plaster coats that have become dry shall be evenly dampened with water prior to applying subsequent coats to obtain uniform suction. There shall be no visible water on the surface when plaster is applied.

7.2 *Plaster Application on Metal Plaster Bases*:

7.2.1 The first (scratch) coat shall be applied with sufficient material and pressure to form full keys through, and to embed the metal base, and with sufficient thickness of material over the metal to allow for scoring the surface.

7.2.1.1 As soon as the first (scratch) coat becomes firm, the entire surface shall be scored in one direction only. The vertical surfaces shall be scored horizontally.

7.2.1.2 The first (scratch) coat shall become sufficiently rigid to support the application of the second (brown) coat without damage to the monolithic continuity of the first (scratch) coat or its key.

7.2.2 The second (brown) coat shall be applied with sufficient material and pressure to ensure tight contact with the first (scratch) coat and to bring the combined thickness of the base coat to the nominal thickness shown in Table 4.

7.2.2.1 The surface of the second (brown) coat shall be brought to a true, even plane with a rod or straightedge, filling surface defects in plane with plaster. Dry rodding the surface of the brown coat shall be permitted.

7.2.2.2 The surface shall be floated uniformly to promote densification of the coat and to provide a surface receptive to bonding of the finish coat.

7.2.3 The third (finish) coat shall be applied with sufficient material and pressure to ensure tight contact with, and complete coverage of the base coat and to the nominal thickness shown in Table 4 and 7.3.1.1.

7.3 *Plaster Application on Solid Plaster Bases*:

7.3.1 High-suction bases shall be evenly dampened with clean water prior to the application of plaster. Do not dampen low-suction solid bases, such as dense concrete or smooth brick.

7.3.1.1 Where masonry or concrete surfaces vary in plane, plaster thickness required to produce level surfaces shall not be required to be uniform.

7.3.2 *Three-Coat Application on Solid Bases*:

7.3.2.1 The first (scratch) coat shall be applied with sufficient material and pressure to ensure tight contact and complete coverage of the solid base, to the nominal thickness shown in Table 4. As soon as the first (scratch) coat becomes firm, the entire surface shall be scored in one direction only. The vertical surfaces shall be scored horizontally.

7.3.2.2 The second (brown) coat shall be applied using the same procedures specified in 7.2.2 and 7.2.2.1, bringing the surface to a true, even plane with a rod or straightedge, filling any defects in plane with plaster and darbying. The surface shall be floated uniformly to provide a surface receptive to the application of the third (finish) coat.

7.3.2.3 The third (finish) coat shall be applied as specified in 7.2.3.

7.3.3 *Two-Coat Application on Solid Plaster Bases*:

7.3.3.1 The first (scratch) coat shall be applied as specified in 7.3.2.1.

7.3.3.2 The second (finish) coat shall be applied as specified in 7.2.3.

7.4 *Finish-Coat Application*:

7.4.1 Job-mixed or factory-prepared finish coats shall be applied, by machine or by hand, as specified in 7.2.3.

7.4.2 The use of excessive water during the application and finishing of finish-coat plaster shall be avoided.

7.5 *Fog-Coat Application*—Job-mixed or factory-prepared fog coats shall be applied in accordance with the directions of the manufacturer.

8. Curing and Time Between Coats

8.1 Provide sufficient moisture in the plaster mix or by moist or fog curing to permit continuous hydration of the cementitious materials. The most effective procedure for curing and time between coats will depend on climatic and job conditions. (See X1.4.2.)

8.2 Sufficient time between coats shall be allowed to permit each coat to cure or develop enough rigidity to resist cracking or other physical damage when the next coat is applied. (See X1.4.2.)

9. Product Marking

9.1 Packaged materials shall be clearly marked or labeled to indicate product, brand name, the manufacturer, and the weight of the material contained therein. Similar information shall be provided in the shipping advices accompanying the shipment of bulk materials.

10. Delivery of Materials

10.1 Packaged materials shall be delivered in factory-sealed, unopened, and unbroken packages, containers, or bundles.

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10.2 Bulk materials shall be delivered in clean transport vessels, free of contaminates.

11. Protection of Materials

11.1 Weather-sensitive materials shall be kept in a dry condition until ready for use. (See A2.4.)

11.2 Bulk materials shall be stored to prevent subsequent contamination and segregation.

12. Environmental Conditions

12.1 Portland cement-based plaster shall not be applied to frozen base or to a base containing frost. Plaster mixes shall not contain frozen ingredients. Plaster coats shall be protected from freezing for a period of not less than 24 h after set has occurred.

12.2 Portland cement plaster shall be protected from uneven and excessive evaporation during dry weather and from strong blasts of dry air.

12.3 *Plaster Application*—When artificial heat is required, heaters shall be located to prevent a concentration of heat on uncured plaster. Heaters shall be vented to the outside to prevent toxic fumes and other products of combustion from adhering to or penetrating plaster bases and plaster. Adequate ventilation shall be maintained in all areas, particularly in interior areas with little or no natural air movement.

12.3.1 Interior environment shall be maintained at a temperature above 40 °F not less than 48 h prior to and during application of portland cement-based plaster. Interior temperature shall be maintained above 40 °F until normal occupancy.

12.3.2 For exteriors, plaster shall be applied when the ambient temperature is higher than 40 °F (4.4 °C), unless the work area is enclosed and heat is provided as described in 12.3.

13. Keywords

13.1 brown coat; cementitious; exterior plaster; fog coat—bond; portland cement; scratch coat; stucco

ANNEXES

(Mandatory Information)

A1. GENERAL INFORMATION

A1.1 The work shall include all labor, materials, services, equipment, and scaffolding required to complete the plastering of the project in accordance with the drawings and specifications, except heat, electric power, and potable water.

A1.2 Where a specific degree of fire resistance is required for plastered assemblies and constructions, details of construction shall be in accordance with official reports of fire tests conducted by recognized testing laboratories, in accordance with Test Methods E119.

A1.3 Where a specific degree of sound control is required for plastered assemblies and constructions, details of construction shall be in accordance with official reports of tests conducted by recognized testing laboratories, in accordance with applicable sound tests of Test Methods E90 or E492.

A1.4 Scaffolding shall be constructed and maintained in strict conformity with applicable laws and ordinances.

A1.5 Work schedules shall provide for completion of work affecting supports, framework or lath of a suspended ceiling (such as loading) before plastering work is accomplished.

A1.6 Surfaces and accessories to receive plaster shall be examined before plastering is applied thereto. The proper authorities shall be notified and unsatisfactory conditions shall be corrected prior to the application of plaster. The plastering contractor shall use this portion of the construction specifications for acceptance or rejection of such surfaces.

A1.6.1 Metal plaster bases, backing, attachment, and accessories to receive plaster shall be examined to determine if the applicable requirements of Specification C1063 have been met unless otherwise required by the contract specifications.

A1.6.2 Accessories shall be installed prior to the application of plaster; therefore, their type, depth, and location shall be included in the project contract documents.

A1.6.3 The construction specifier shall describe, in the proper section of the contract specifications, the physical characteristics of solid surface bases to receive plaster, including measures to promote bond. The plane tolerance shall be not more than ¼ in. in 10 ft (3.1 mm/m). The mortar joints shall be flush and not struck. Dissimilar materials such as ties, reinforcing steel, and so forth, shall be cut back ⅛ in. (3 mm) below the surface and treated with a corrosion-resistant coating. Masonry shall be solid at corners and where masonry changes thickness in a continuous construction. Form release compounds shall be compatible with plaster or be completely removed from surfaces to receive plaster.

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A2. DESIGN CONSIDERATIONS

A2.1 Exterior plaster (stucco) is applied to outside surfaces of all types of structures to provide a durable, fire-resistant covering. Interior plaster is applied to inside surfaces that will be subjected to various exposures, such as abrasion, vibration, or to continuous or frequent moisture and wetting, or to freezing or thawing.

A2.1.1 Sufficient slope on faces of plastered surfaces shall be provided to prevent water, snow, or ice from accumulating or standing. Air-entrained portland cement plaster provides improved resistance to freeze/thaw deterioration. Resistance to rain penetration is improved where plaster has been adequately densified during application and properly cured. Plaster shall not, however, be considered to be "waterproof."

A2.1.2 The construction specifier shall describe, in the appropriate section of the contract specifications, the requirements for furnishing and application of flashing. Flashing shall be specified at openings, perimeters, and terminations to prevent water from getting behind plaster. Flashing shall be corrosion-resistant material. Aluminum flashing shall not be used. Flashing supplemented with sealant shall be permitted.

A2.1.3 Sealing or caulking of V-grooves, exposed ends, and edges of plaster panels or exterior work to prevent entry of water shall be provided.

A2.1.4 To reduce spalling where interior plaster abuts openings, such as wood or metal door or window frames, or fascia boards, the edge of three-coat plaster shall be tooled through the second and finish coats to produce a continuous small V-joint of uniform depth and width. On two-coat work, the V-joint shall be tooled through the finish coat only.

A2.1.5 Provide in the appropriate project specification section that solid bases to receive plaster shall not be treated with bond breakers, parting compounds, form oil, or other material that will prevent or inhibit the bond of the plaster to the base.

A2.1.6 Maximum allowable deflection for vertical or horizontal framing for plaster, not including cladding, shall be L/360.

A2.2 *Provisions for Drainage Behind Exterior Plaster:*

A2.2.1 In multistory construction where lath and portland cement plaster exterior walls are continuous past a floor slab, tracks or plates and studs shall be offset to provide a space not less than ⅜ in. (9.5 mm) between the inner face of the exterior plaster and the edge of the floor slab.

A2.2.2 At the bottom of exterior walls where the wall is supported by a floor or foundation, a drip screed and through-wall flashing or weep holes or other effective means to drain away any water that may get behind the plaster shall be provided.

A2.2.3 Where vertical and horizontal exterior plaster surfaces meet, both surfaces shall be terminated with casing beads with the vertical surface extending at least ¼ in. (6 mm) below the intersecting horizontal plastered surface, thus providing a drip edge. The casing bead for the horizontal surface shall be terminated not less than ¼ in. from the back of the vertical surface to provide drainage.

A2.3 *Relief from Stresses:*

A2.3.1 For information on the requirements for control joints and perimeter relief, where a metal plaster base is installed; see the Installation Section of Specification C1063. Solid plaster bases are exempt from these criteria, except as stated in Specification C1063, Section 7.11.4.3.

A2.3.1.1 Control joints shall be cleaned and clear of plaster within the control area after plaster application and before final plaster set.

A2.3.1.2 Prefabricated control joints and expansion joint members shall be installed prior to the application of plaster. Their type, location, depth, and method of installation shall be determined by the characteristics of the substrate and included in the project contract documents.

A2.3.1.3 A groove or cut in plaster only shall not be considered a control or expansion joint.

A2.3.2 Where plaster and metal plaster base continues across the face of a concrete column, or other structural member, water-resistive building paper or felt shall be placed between the metal plaster base and the structural member (paper or plastic-backed metal plaster base shall be permitted). Where the width of the structural member exceeds the approved span capability of the metal plaster base, self-furring metal plaster base shall be used and sparingly scatter nailed to bring paper and metal base to general plane.

A2.3.3 Where dissimilar base materials abut and are to receive a continuous coat of plaster: (*1*) a two-piece expansion joint, casing beads back-to-back, or premanufactured control-expansion joint member shall be installed; or (*2*) the juncture shall be covered with a 6-in. (152-mm) wide strip of galvanized, self-furring metal plaster base extending 3 in. (76 mm) on either side of the juncture; or (*3*) where one of the bases is metal plaster base, self-furring metal plaster base shall be extended 4 in. (102 mm) onto the abutting base.

A2.4 *Weather-Sensitive Materials*—Water-sensitive materials shall be stored off the ground or floor and under cover, avoiding contact with damp floor or wall surfaces. Temperature-sensitive materials shall be protected from freezing. Bulk materials shall be stored in the area of intended use and caution shall be exercised to prevent contamination and segregation of bulk materials prior to use.

A2.5 *Admixtures*—Admixtures shall be proportioned and mixed in accordance with the published directions of the admixture manufacturer.

A2.5.1 The quantity of admixtures required to impart the desired performance is generally very small in relation to the quantities of the other mix ingredients. Batch-to-batch quantities shall be measured accurately.

A2.5.2 Air-entraining agents cause air to be incorporated in the plaster in the form of minute bubbles, usually to improve frost or freeze-thaw resistance, or workability of the plaster during application. Air-entraining agents for portland cement-based plaster shall meet the requirements of Specification C260.

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APPENDIX

(Nonmandatory Information)

X1. GENERAL INFORMATION

X1.1 *Additions*—Bonding compounds or agents may be pre-applied to a surface to receive plaster. In this usage it is not considered an admixture. Bonding compounds that are integrally mixed with plaster prior to its application are considered admixtures. Where exterior exposure and cyclic wetting are anticipated, the re-emulsification capability of the bonding material must be considered. Bonding agents are only as good as the material surface to which they are applied; therefore, form release materials must be removed from concrete or be compatible with the bonding material used. Bonding agents in plaster mixes may increase the cohesive properties of the plaster. Bonding agents should meet the requirements of Specifications C631 or C932.

X1.1.1 By the use of a suitable admixture or additive, it is possible to improve plaster's resistance to moisture movement. However, the use of the terms damproofing or water proofing is misleading, and their use shall be discouraged.

X1.1.2 Natural or synthetic fibers, ½ to 2 in. (13 to 51 mm) in length and free of contaminates may be specified to improve resistance to cracking or to impart improved pumpability characteristics. The quantities per batch shall be in accordance with the published directions of the fiber manufacturer. No more than 2 lb (0.90 kg) of fiber should be used per cubic foot of cementitious material. Asbestos fibers should not be used. Alkaline-resistant glass fibers are recommended where glass fiber is used.

X1.1.3 Plasticizers containing hydrated lime putty, air-entraining agents, or approved fatteners to increase the workability of a portland cement plaster may be used. Plaster consistency and workability are affected by plasticizers that are beneficial in proper quantities from an economic standpoint, but in excess can be detrimental to the long-term performance of the plaster in place.

X1.1.4 Color material for integral mixing with plaster should not significantly alter the setting, strength development, or durability characteristics of the plaster. Natural or mineral pigments that are produced by physical processing of materials mined directly from the earth appear to offer the best long-term performance with respect to resistance to fading. Plaster color is determined by the natural color of the cementitious materials, aggregate, and any color pigment, and their proportions to each other. The use of white cement with the desired mineral oxide pigment color material may result in truer color.

X1.1.4.1 The uniformity of color cannot be guaranteed by the materials manufacturer of the component materials or by the applicating contractor. Color uniformity is affected by the uniformity of proportioning, thoroughness of mixing, cleanliness of equipment, application technique, and curing conditions and procedure, which are generally under the control of the applicator. Color uniformity is affected to an even greater degree by variations in thickness and differences in the suction of the base coat from one area or location to another, the type of finish selected, the migration of color pigments with moisture, and with job site climatic and environmental conditions. These factors are rarely under the control of the applicator.

X1.1.5 Corrective measures for conditions cited in 5.2 include the installation of a furred or self-furring metal plaster base; application of a repair/build-out mortar; grinding/chipping of the concrete base; or combinations thereof. Because these measures may have structural or integrity consequences, they should be considered by all concerned parties with the ultimate selection left to the discretion of the design authority as defined by the Owner-Contractor Agreement.

X1.1.6 The "Project Documents" consist of many individual items but includes both the Project Specifications and the Contract Drawings. It is the intent of this standard to have the type, location, depth, and orientation of control and expansion joints both stated in the Project Specifications as well as shown and detailed on the Contract Drawings where either or both of these documents exist for any particular project.

X1.2 *Finish Coat Categories* (applicable to both natural and colored finishes):

X1.2.1 Texture, as a description of surface appearance, is identified generally with the method and tools used to achieve the finish. Texture can be varied by the size and shape of the aggregate used, the equipment or tools employed, the consistency of the finish coat mix, the condition of the base to which it is applied, and by subsequent decorative or protective treatment.

X1.2.2 There are many factors that affect the ultimate appearance of textured and integrally colored plaster. A suitably sized sample panel should be submitted for approval by the architect and the owner. Once approved, the sample should be maintained on site for reference and comparison.

X1.2.3 With the almost limitless variations possible for finish appearance or texture, the same term may not have the same meaning to the specifier, the contractor, and the actual applicator. The specifier is cautioned to use an approved range of sample panels. To provide some guidance, the following categories are generally understood and recognized to imply a particular method of application technique or resulting finished appearance:

X1.2.4 *Smooth Trowel*—Hand- or machine-applied plaster floated as smooth as possible and then steel-troweled. Steel troweling should be delayed as long as possible and used only to eliminate uneven points and to force aggregate particles into the plaster surface. Excessive troweling should be avoided.

X1.2.5 *Float*—A plaster devoid of coarse aggregate applied in a thin coat completely covering the base coat, followed by a

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second coat that is floated to a true plane surface yielding a relatively smooth to fine-textured finish, depending on the size of aggregate and technique used. It is also known as sand finish.

X1.2.6 *Trowel-Textured (such as Spanish Fan, Trowel Sweep, English Cottage)*—A freshly applied plaster coat is given various textures, designs, or stippled effects by hand troweling. The effects achieved may be individualized and may be difficult to duplicate by different applicators.

X1.2.7 *Rough-Textured (such as Rough Cast, Wet Dash, Scottish Harl)*—Coarse aggregate is mixed intimately with the plaster and is then propelled against the base coat by trowel or by hand tool. The aggregate is largely unexposed and deep textured.

X1.2.8 *Exposed Aggregate (also known at Marblecrete)*—Varying sizes of natural or manufactured stone, gravel, shell, or ceramic aggregates are embedded by hand or machine propulsion into a freshly applied finish "bedding" coat. The size of the aggregate determines the thickness of the "bedding" coat. It is generally thicker than a conventional finish coat.

X1.2.9 *Spray-Textured*—A machine-applied plaster coat directed over a previously applied thin smooth coat of the same mix. The texture achieved depends on the consistency of the sprayed mixture, moisture content of the base to which it is applied, the angle and distance of the nozzle to the surface, and the pressure of the machine.

X1.2.10 *Brush-Finish*—A method of surfacing or resurfacing new or existing plaster. The plaster is applied with a brush to a thickness of not less than $\frac{1}{16}$ in. (1.6 mm). For an existing plaster surface the bond capability must be determined by test application or a bonding compound must be applied prior to the brush application.

X1.2.11 *Miscellaneous Types*—This finish coat category is somewhat similar to trowel-textured finishes, except that the freshly applied plaster is textured with a variety of instruments other than the trowel, such as swept with a broom or brush, corrugated by raking or combing, punched with pointed or blunt instrument, scored by aid of a straightedge into designs of simulated brick, block, stone, and so forth. A variation of texturing a finish coat involves waiting until it has partially set and then flattening by light troweling of the unevenly applied plaster or by simulating architectural terracotta.

X1.2.12 *Scraffitto*—A method of applying two or more successive coats of different colored plaster and then removing parts of the overlaid coats to reveal the underlaying coats, usually following a design or pattern. This is not generally considered a finish coat operation because of the number of thickness of coats.

X1.3 When specified as alternate for final coat, trowel- or plaster machine-applied textured acrylic finishes containing aggregate may be substituted for portland cement finish coats, provided brown coat is properly prepared and finish is applied according to the manufacturer's directions.

X1.3.1 *Staining of Plaster*—Staining and discoloration of plaster, caused by free water draining from one plane of plaster to another or from a dissimilar material onto a plaster surface, can be minimized by providing sufficient depth and angle for drip caps and the use of water-resistive surface coatings.

X1.3.2 Staining of plaster due to entrapment of moisture behind the plaster, can be avoided or minimized by providing an air space for ventilation between the back of the plaster and adjacent material. This type of staining may occur where insulation with or without vapor barrier, or other material containing asphaltic or coal tar derivatives, fireproofing salts, and so forth, can migrate with moisture movement to the finished plaster surface.

X1.3.3 Integrally colored plaster can be discolored or altered in shade if subjected to moisture, either from uncured base coats or external sources, such as rain, too soon after applications.

X1.4 *Installation Instructions:*

X1.4.1 Hand mixing should not be permitted, except as approved by the contract specifier.

X1.4.1.1 After all ingredients are in the mixer, mix the plaster for 3 to 5 min.

X1.4.1.2 The amount of water used in the plaster mix should be determined by the plasterer. Factors such as the suction of the base, or of the previous coat, water content of the aggregate, drying conditions, and finishing operations should be considered in determining water usage. Use of excessive water may result in dropouts, fall or slide off, excessive shrinkage, high porosity, and lower strength.

X1.4.2 *Time Between Coats and Curing for Portland Cement-Based Plaster:*

X1.4.2.1 The timing between coats will vary with climatic conditions and types of plaster base. Temperature and relative humidity extend or reduce the time between consecutive operations. Cold or wet weather lengthens and hot or dry weather shortens the time period. Moderate changes in temperature and relative humidity can be overcome by providing additional heating materials during cold weather and by reducing the absorption of the base by pre-wetting during hot or dry weather.

X1.4.2.2 In order to provide more intimate contact and bond between coats and to reduce rapid water loss, the second coat should be applied as soon as the first coat is sufficiently rigid to resist cracking, the pressures of the second coat application, and the leveling process.

X1.4.2.3 The amount of water and the timing for curing portland cement plaster will vary with the climatic conditions, the type of base, and use or nonuse of water-retentive admixtures.

X1.4.2.4 Some moisture must be retained in or added back to freshly applied portland cement-based plaster. If the relative humidity is relatively high (above 75 %), the frequency for rewetting a surface may be reduced. If it is hot, dry, and windy, the frequency of rewetting must be increased.

X1.4.2.5 Consider the physical characteristics of the structure as well as the previously mentioned conditions when selecting the method of curing. The method can be one or a combination of the following:

(*1*) Moist curing is accomplished by applying a fine fog spray of water as frequently as required, generally twice daily in the morning and evening. Care must be exercised to avoid erosion damage to portland cement-based plaster surfaces.

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Except for severe drying conditions, the wetting of finish coat should be avoided, that is, wet the base coat prior to application of the finish coat.

(*2*) Plastic film, when taped or weighted down around the perimeter of the plastered area, can provide a vapor barrier to retain the moisture between the membrane and plaster. Care must be exercised in placing the film: if too soon, the film may damage surface texture; if too late, the moisture may have already escaped.

(*3*) Canvas, cloth, or sheet material barriers can be erected to deflect sunlight and wind, both of which will reduce the rate of evaporation. If the humidity is very low, this option alone may not provide adequate protection.

SUMMARY OF CHANGES

Committee C11 has identified the location of selected changes to this specification since the last issue, C926 - 11, that may impact the use of this specification. (Approved October 1, 2011)

(*1*) Revised 5.2.3.
(*2*) Added X1.1.5 and X1.1.6.
(*3*) Revised A1.6.3.

Committee C11 has identified the location of selected changes to this specification since the last issue, C926 - 06, that may impact the use of this specification. (Approved May 15, 2011)

(*1*) Added 3.2.23.
(*2*) Revised A1.6 and A1.6.3.
(*3*) Revised A2.3.1.
(*4*) Revised A2.3.1.2.
(*5*) Added A1.6.2.
(*6*) Revised 5.2.
(*7*) Revised 5.2.3.

Committee C11 has identified the location of selected changes to this specification since the last issue, C926 - 98a(2005), that may impact the use of this specification. (Approved June 1, 2006)

(*1*) Removed reference to "plastering section" in A2.3.1.3.

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Date Submitted	7/31/2012	**Section**	Chapter 35	**Proponent**	Joseph Belcher
Chapter	35	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Updates AAMA/NPEA/NSA 2100—11

Rationale

Update of an adopted standard.

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

Adopts latest version of adopted standard.

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

Adopts latest version of adopted standard.

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

Adopts latest version of adopted standard.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

AAMA	American Architectural Manufacturers Association 1827 Walden Office Square, Suite 550 Schaumburg, IL 60173-4268	
Standard Reference Number	Title	Referenced in code section number
AAMA/NPEA/NSA 2100—11	Voluntary Specifications for Sunrooms	202, 2002.6

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A M E R I C A N A R C H I T E C T U R A L

AAMA/NPEA/NSA 2100-11

Specifications for Sunrooms









M A N U F A C T U R E R S A S S O C I A T I O N

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Date Submitted	7/26/2012	**Section**	Standards	**Proponent**	Dwight Wilkes
Chapter	35	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	Yes				

Related Modifications

5623, 5582, 5636

Summary of Modification

As the Base Code [2012 IBC] only recognizes two [2] AAMA standards and the Florida 2010 Code has eleven [11] standards with multiple editions, this modification is bring into the 2013 Florida Building Code the existing standards in Florida and to remove outdated and include current standards.

Rationale

The current Florida Standards are currently needed and are in use. Only the AAMA 2502 is new and replaces AAMA 103.
In 2007 AAMA removed the Engineering Design Rules from the AAMA 103 Procedural Guide, transferring them (with no changes) to a new document, AAMA 2502, Comparative Analysis Procedure for Window and Door Products. Therefore the AAMA 103 section 2.0 citation should be replaced in the code with AAMA 2502-07.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these standards are currently in the 2010 FBC, and the addition of AAMA 2502 replaces AAMA 103, therefore no impact.

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

No impact as these standards are currently in the 2010 FBC, and the addition of AAMA 2502 replaces AAMA 103, therefore no impact.

Impact to industry relative to the cost of compliance with code

No impact as these standards are currently in the 2010 FBC, and the addition of AAMA 2502 replaces AAMA 103, therefore no impact.

Requirements

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

Helps protect the health and welfare of the public by having these standards remain in the Florida code.

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

Strengthens the code by having these standards remain in the Florida code.

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

This modification does not discriminate as it allows the use of any product that shows proof of meeting these code established standards.

Does not degrade the effectiveness of the code

This modification enhances the code by including the standards that were established in the 2010 FBC and by including these in the base code for the 2013 FBC.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

These standards have been acknowledged to be unique to Florida and were not intended to sunset since they are structural wind and / or water related.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

OTHER

Explanation of Choice

Some fo the proposed standards have been submitted to the ICC some have not.

S5674-A1

Proponent Anthony Miller **Submitted** 9/23/2012 **Attachments** Yes Miller

Text of Modification

AAMA
American Architectural Manufacturers Association
1827 Walden Office Square, Suite 550
Schaumburg, IL 60173-4268
Standard
reference
number
Title
Referenced
in code
section number
101/I.S.2-97
Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors
1008.1.7
1710.5.1
1710.5.3
Table 1710.5.2
2411.3.2.1
101/I.S.2/NAFS-02
Voluntary Performance Specification for Windows, Skylights and Glass Doors
1710.5.1
1710.6
1710.5.3
Table 1710.5.2
2405.5
2612.2
AAMA 2502-07
Comparative Analysis Procedure for Window and Door Products
1710.5.3
2411.3.2.6
~~AAMA 103 - 09 or 10 or 11~~
~~Procedural Guide for Certification of Window and Door Assemblies, Sec. 2 - Engineering Design Rules~~
~~2411.3.2.6~~
AAMA 1402-86 or 09
Standard Specifications for Aluminum Siding, Soffit and Fascia
1404.5.1
AAMA 203- 98 or 03
Procedural Guide for the Window Inspection and Notification System
1710,5,3
AAMA 501-94 or 05
Methods of Test for Exterior Walls
1710.5.6.5
2411.3.2.1
AAMA/WDMA/CSA101/
I.S.2/A440-05 or 08 or 11
North American Fenestration Standard/Specifications for Windows, Doors and Skylights
1710.5.1
1710.6
1710.5.3
1710.5.6.1
1720.5.6.4
2405.5
AAMA 450-06 or ~~09~~ or 10
Voluntary Performance Rating Method for Mulled Fenestration Assemblies
1710.5.6.1
AAMA 506-06 or 08 or 11
Voluntary Specifications for Impact and Cycle Testing of Fenestration Products
202
1609.1.2
AAMA 800-05 or 08 or 10
Voluntary Specifications and Test Methods for Sealants
2510.8
AAMA/NPEA/NSA 2100- 02 or 11

Rationale

The 2012 IBC only references a single edition of ASTM E1300, E1886 and E1996. The Florida Product Approval system only allows products to be tested to specific editions referenced in the building code. Many products have a 4-8 year certificaiton life so having previous editions of these standards will allow manufacturers to utlilize the full life of a certification without having to retest their products. If only one edition is referenced, this will require manufacturers to retest all product

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

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

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

This amendment will actually reduce the cost of compliance because it allows manufacturers to utlilize full certification life of each product without excessive testing.

Requirements

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

Health, safety and welfare of the public are maintained as these provisions are currently enforced in the 2010 FBC.

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

This will improve the code by reinstating standards that are already being enforced with the 2010 FBC.

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

Does not discriminate because it allows the use of any product that shows proof of compliance with the standards established by the code.

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code as it simply reinstates requirements that are already in effect in the 2010 FBC.

MODIFICATION TEXT:

AAMA	American Architectural Manufacturers Association 1827 Walden Office Square, Suite 550 Schaumburg, IL 60173-4268	
Standard reference number	Title	Referenced in code section number
101/I.S.2-97	Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors	1008.1.7 1710.5.1 1710.5.3 Table 1710.5.2 2411.3.2.1
101/I.S.2/NAFS-02	Voluntary Performance Specification for Windows, Skylights and Glass Doors	1710.5.1 1710.6 1710.5.3 Table 1710.5.2 2405.5 2612.2
AAMA 2502-07	Comparative Analysis Procedure for Window and Door Products	1710.5.3 2411.3.2.6
~~AAMA 103 - 09 or 10 or 11~~	~~Procedural Guide for Certification of Window and Door Assemblies, Sec. 2 - Engineering Design Rules~~	~~2411.3.2.6~~
AAMA 1402-86 or 09	Standard Specifications for Aluminum Siding, Soffit and Fascia	1404.5.1
AAMA 203- 98 or 03	Procedural Guide for the Window Inspection and Notification System	1710,5,3
AAMA 501-94 or 05	Methods of Test for Exterior Walls	1710.5.6.5 2411.3.2.1
AAMA/WDMA/CSA101/	North American Fenestration Standard/Specifications for Windows, Doors and Skylights	1710.5.1 1710.6

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I.S.2/A440-05 or 08 or 11		1710.5.3 1710.5.6.1 1720.5.6.4 2405.5
AAMA 450-06 or ~~09~~ or 10	Voluntary Performance Rating Method for Mulled Fenestration Assemblies	1710.5.6.1
AAMA 506-06 or 08 or 11	Voluntary Specifications for Impact and Cycle Testing of Fenestration Products	202 1609.1.2
AAMA 800-05 or 08 or 10	Voluntary Specifications and Test Methods for Sealants	2510.8
AAMA/NPEA/NSA 2100- 02 or 11	(Voluntary 02) Specifications for Sunrooms	202 2002.1

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S5674 -A1 Text Modification

AAMA	American Architectural Manufacturers Association 1827 Walden Office Square, Suite 550 Schaumburg, IL 60173-4268	
Standard reference number	Title	Referenced in code section number
101/I.S.2-97	Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors	1008.1.7 1710.5.1 1710.5.3 Table 1710.5.2 2411.3.2.1
101/I.S.2/NAFS-02	Voluntary Performance Specification for Windows, Skylights and Glass Doors	1710.5.1 1710.6 1710.5.3 Table 1710.5.2 2405.5 2612.2
AAMA 2502-07	Comparative Analysis Procedure for Window and Door Products	1710.5.3 2411.3.2.6
~~AAMA 103 - 09 or 10 or 11~~	~~Procedural Guide for Certification of Window and Door Assemblies, Sec. 2 - Engineering Design Rules~~	~~2411.3.2.6~~
AAMA 1402-86 or 09	Standard Specifications for Aluminum Siding, Soffit and Fascia	1404.5.1
AAMA 203- 98 or 03	Procedural Guide for the Window Inspection and Notification System	1710,5,3
AAMA 501-94 or 05	Methods of Test for Exterior Walls	1710.5.6.5 2411.3.2.1
AAMA/WDMA/CSA101/ I.S.2/A440-05 or 08 or 11	North American Fenestration Standard/Specifications for Windows, Doors and Skylights	1710.5.1 1710.6 1710.5.3 1710.5.6.1

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		1720.5.6.4 2405.5
AAMA 450-06 or ~~09~~ or 10	Voluntary Performance Rating Method for Mulled Fenestration Assemblies	1710.5.6.1
AAMA 506-06 or 08 or 11	Voluntary Specifications for Impact and Cycle Testing of Fenestration Products	202 1609.1.2
AAMA 800-05 or 08 or 10	Voluntary Specifications and Test Methods for Sealants	2510.8
AAMA/NPEA/NSA 2100- 02 or 11	(Voluntary 02) Specifications for Sunrooms	202 2002.1

ASTM	ASTM International 100 Barr Harbor DriveWest Conshohocken, PA 19428-2959	
Standard Reference Number	Title	Referenced in Code Section Number
E 1300-04e01, 07e01, or 09a	Practice for Determining Load Resistance of Glass in Buildings	1715.5.2.1, 2404.1, 2404.2, 2404.3.1, 2404.3.2, 2404.3.3, 2404.3.4, 2404.3.5, 2411.2.1.1, 2411.2.1.2 2411.3.1.2
E 1886-02 or 05	Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials	1609.1.2, 1710.5
E 1996-02, 05, 06, 09, or 12	Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors, and Storm Shutters Impact by Windborne Debris in Hurricanes	1609.1.2, 1609.1.2.2, 1710.5

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S5674 -A7 Text Modification

AAMA	American Architectural Manufacturers Association 1827 Walden Office Square, Suite 550 Schaumburg, IL 60173-4268	
Standard reference number	Title	Referenced in code section number
101/I.S.2-97	Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors	1008.1.7 1710.5.1 1710.5.3 Table 1710.5.2 2411.3.2.1
101/I.S.2/NAFS-02	Voluntary Performance Specification for Windows, Skylights and Glass Doors	1710.5.1 1710.6 1710.5.3 Table 1710.5.2 2405.5 2612.2
AAMA 2502-07	Comparative Analysis Procedure for Window and Door Products	1710.5.3 2411.3.2.6
~~AAMA 103 - 09 or 10 or 11~~	~~Procedural Guide for Certification of Window and Door Assemblies, Sec. 2 - Engineering Design Rules~~	~~2411.3.2.6~~
AAMA 1402-86 or 09	Standard Specifications for Aluminum Siding, Soffit and Fascia	1404.5.1
AAMA 203- 98 or 03	Procedural Guide for the Window Inspection and Notification System	1710,5,3
AAMA 501-94 or 05	Methods of Test for Exterior Walls	1710.5.6.5 2411.3.2.1
AAMA/WDMA/CSA101/ I.S.2/A440-05 or 08 or 11	North American Fenestration Standard/Specifications for Windows, Doors and Skylights	1710.5.1 1710.6 1710.5.3 1710.5.6.1

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		1720.5.6.4 2405.5
AAMA 450-06 or ~~09~~ or 10	Voluntary Performance Rating Method for Mulled Fenestration Assemblies	1710.5.6.1
AAMA 506-06 or 08 or 11	Voluntary Specifications for Impact and Cycle Testing of Fenestration Products	202 1609.1.2
AAMA 800-05 or 08 or 10	Voluntary Specifications and Test Methods for Sealants	2510.8
AAMA/NPEA/NSA 2100- 02 or 11	(Voluntary 02) Specifications for Sunrooms	202 2002.1

ASTM	ASTM International 100 Barr Harbor DriveWest Conshohocken, PA 19428-2959	
Standard Reference Number	Title	Referenced in Code Section Number
E 1886-02 or 05	Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials	1609.1.2, 1710.5
E 1996-02, 05, 06, 09, or 12	Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors, and Storm Shutters Impact by Windborne Debris in Hurricanes	1609.1.2, 1609.1.2.2, 1710.5

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American Architectural Manufacturers Association
Window and Door Manufacturers Association

NORTH AMERICAN FENESTRATION STANDARD

Voluntary Performance Specification for Windows, Skylights and Glass Doors

101/I.S. 2/NAFS-02 (Formerly ANSI/AAMA/NWWDA 101/I.S.2-97)

Combining
ANSI/AAMA/NWWDA 101/I.S.2-97
"Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors"
And
AAMA/WDMA 1600/I.S.7,
"Voluntary Specification for Skylights"
And
References from CSA A440 Windows





Application Made for ANSI APPROVAL

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AAMA/NWWDA
101/I.S.2-97

Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors





Errata 5/2005
Reprinted 5/2005

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AAMA/WDMA/CSA 101/I.S.2/A440-05

Standard/Specification for windows, doors, and unit skylights







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AAMA/WDMA/CSA 101/I.S.2/A440-08

NAFS
North American Fenestration Standard/Specification for windows, doors, and skylights







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AAMA/WDMA/CSA 101/I.S.2/A440-11

NAFS 2011 — North American Fenestration Standard/Specification for windows, doors, and skylights



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AMERICAN ARCHITECTURAL

AAMA 1402-09

(editorially revised)

Standard Specifications for Aluminum Siding, Soffit and Fascia





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A M E R I C A N A R C H I T E C T U R A L

AAMA 1402-86

Standard Specifications for Aluminum Siding Soffit and Fascia





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A M E R I C A N A R C H I T E C T U R A L

AAMA 203-03

Procedural Guide for the Window Inspection and Notification System



M A N U F A C T U R E R S A S S O C I A T I O N

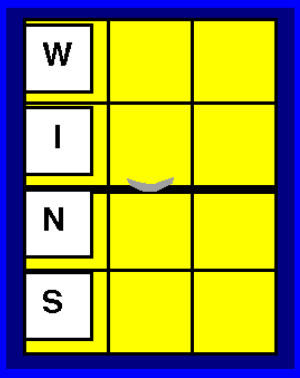
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AAMA 203 – 98
Last Revision 9/1/98

PROCEDURAL GUIDE

For the

Window Inspection and Notification System



AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION

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American Architectural Manufacturers Association
National Patio Enclosure Association
National Sunroom Association

Voluntary Specifications for Sunrooms

AAMA/NPEA/NSA 2100-02







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AMERICAN ARCHITECTURAL

AAMA 2502-07

Comparative Analysis Procedure for Window and Door Products





MANUFACTURERS ASSOCIATION

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A M E R I C A N A R C H I T E C T U R A L

AAMA 450-06

Voluntary Performance Rating Method for Mulled Fenestration Assemblies



M A N U F A C T U R E R S A S S O C I A T I O N

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AMERICAN ARCHITECTURAL

AAMA 450-10

Voluntary Performance Rating Method for Mulled Fenestration Assemblies





MANUFACTURERS ASSOCIATION

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A M E R I C A N A R C H I T E C T U R A L

AAMA 501-05

(Errata 4/5/05)

Methods of Tests for Exterior Walls



M A N U F A C T U R E R S A S S O C I A T I O N

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A M E R I C A N A R C H I T E C T U R A L

AAMA 501-94

Methods Of Test For Exterior Walls

M A N U F A C T U R E R S A S S O C I A T I O N

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A M E R I C A N A R C H I T E C T U R A L

AAMA 506-06

Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products



M A N U F A C T U R E R S A S S O C I A T I O N

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AAMA 506-06
ORIGINALLY PUBLISHED: 2000
PRECEDING DOCUMENT: 506-00
REVISED: 3/06
PUBLISHED: 3/06

American Architectural Manufacturers Association
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1.0 SCOPE

1.1 This specification uses existing ASTM test methods to qualify windows, doors, skylights, storefronts and curtain walls as "hurricane resistant".

1.2 This specification is intended to include fenestration products of all framing materials covered by the gateway documents listed in paragraph 1.3.

1.3 Products seeking qualification through this specification must first satisfy the gateway requirements of one of the following:

1.3.1 Windows and Glass Doors:

1.3.1.1 AAMA/NWWDA 101/I.S.2-97

1.3.1.2 AAMA/WDMA 101/I.S.2/NAFS-02

1.3.1.3 AAMA/WDMA/CSA 101/I.S.2/A440-05

1.3.2 Curtain walls and Storefront: AAMA 501-05

2.0 REFERENCED DOCUMENTS

2.1 AAMA/NWWDA 101/I.S.2-97, Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors

2.2 AAMA/WDMA 101/I.S.2/NAFS-02, Voluntary Performance Specification for Windows, Skylights and Glass Doors – A North American Fenestration Standard

2.3 AAMA/WDMA/CSA 101/I.S.2/A440-05, Standard/ Specification for Windows, Doors, and Unit Skylights

2.4 AAMA 501-05, Methods of Test for Exterior Walls

2.5 ASTM E 1886-02 or -05, Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials

2.6 ASTM E 1996-02 or -05, Standard Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes

3.0 SIGNIFICANCE AND USE

3.1 This specification provides a system for rating the ability of windows, doors, skylights, storefront and curtain walls and sliding glass doors to withstand impact and pressure cycling generally associated with hurricane conditions.

3.2 The basis for this specification is initial qualification through one of the gateway documents referenced in paragraph 1.3 followed by impact and cycle testing in accordance with ASTM E 1886 and ASTM E 1996.

4.0 APPARATUS

4.1 Apparatus shall meet the requirements outlined in ASTM E 1886.

5.0 CALIBRATION

5.1 Calibration of all test equipment shall be performed in accordance with ASTM E 1886.

5.2 Calibration records shall be maintained for a period of no less than four years.

6.0 TEST SPECIMENS

In addition to the guidelines given in ASTM E 1886 and ASTM E 1996, the following requirements shall be met:

6.1 Test specimens shall be the largest size for which approval is desired.

6.2 To be approved to this specification, mullions shall be tested as part of the test samples. Testing of one mullion profile or configuration does not qualify any other mullion profile or configuration. Exception: The addition of cladding or of a wrapped material to the mullion will not constitute a change in profile or configuration providing material is not removed from the mullion.

Mullions shall only be qualified to the largest window or door (width and height) on which testing is performed.

6.3 To be approved to this specification, true muntins shall be tested as part of the test samples. Testing of one muntin profile or configuration does not qualify any other muntin profile or configuration. Any variation in muntin joinery, wall thickness or glazing application can only be approved by testing the variation(s) through the entire procedure outlined in ASTM E 1886.

7.0 TEST SPECIMEN PREPARATION

7.1 Test specimen shall be mounted using anchors and anchor spacing for which approval is desired. To qualify more than one anchor type, at least one of the test samples must be tested with that anchor and its appropriate framing material (i.e. wood, masonry, etc.).

7.2 Test specimen shall not incorporate anchors, supports or stiffeners that are not intended to be included during normal installation.

8.0 TEST REPORT

8.1 In addition to the items required by ASTM E 1886 and ASTM E 1996, the following items shall be detailed in the test report.

8.1.1 A reference to the test report showing compliance with the gateway requirements of paragraph 1.3.

8.1.2 A description of the anchor type and spacing used during the test with any necessary drawings to adequately describe anchor details and accurate anchor locations.

8.1.3 When used, accurate identification of mullions and muntins including extrusion drawings, shall accompany the test report.



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AMERICAN ARCHITECTURAL

AAMA 506-08

Voluntary Specifications for Impact and Cycle Testing of Fenestration Products





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AAMA 506-08
ORIGINALLY PUBLISHED: 2000
PRECEDING DOCUMENT" 506-06
PUBLISHED: 4/08

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1.0 SCOPE

1.1 This specification uses existing ASTM test methods to qualify windows, doors and skylights as "impact resistant."

1.2 This specification is intended to include fenestration products of all framing materials covered by the standards and specifications listed in Section 1.3.

1.3 Products seeking qualification through this specification shall first satisfy the minimum requirements of one of the following:

1.3.1 AAMA/NWWDA 101/I.S. 2-97

1.3.2 AAMA/WDMA 101/I.S. 2/NAFS-02

1.3.3 AAMA/WDMA/CSA 101/I.S. 2/A440-05

1.3.4 AAMA/WDMA/CSA 101/I.S. 2/A440-08

2.0 REFERENCED DOCUMENTS

2.1 References to the documents listed below shall be to the edition indicated. Any updated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

2.2 American Architectural Manufacturers Association (AAMA)

AAMA/NWWDA 101/I.S.2-97, Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors

AAMA/WDMA 101/I.S.2/NAFS-02, Voluntary Performance Specification for Windows, Skylights and Glass Doors – A North American Fenestration Standard

AAMA/WDMA/CSA 101/I.S.2/A440-05, Standard/ Specification for Windows, Doors, and Unit Skylights

AAMA/WDMA/CSA 101/I.S.2/A440-08, North American Fenestration Standard/Specification for Windows, Doors, and Skylights

AAMA 450-06, Voluntary Performance Rating Method for Mulled Fenestration Assemblies

2.3 ASTM International (ASTM)

ASTM E 1886-02 or -05, Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials

ASTM E 1996-02 or -05, Standard Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes

3.0 SIGNIFICANCE AND USE

3.1 This specification provides a system for rating the ability of windows, doors, skylights and sliding glass doors to withstand impact and pressure cycling generally associated with hurricane conditions.

3.2 The basis for this specification is initial qualification through one of the standards and specifications referenced in Section 1.3, followed by impact and cycle testing in accordance with ASTM E 1886 and ASTM E 1996.

4.0 APPARATUS

Apparatus shall meet the requirements outlined in ASTM E 1886.

5.0 CALIBRATION

5.1 Calibration of all test equipment shall be performed in accordance with ASTM E 1886.

5.2 Calibration records shall be maintained for a period of no less than four years.

6.0 TEST SPECIMENS

In addition to the guidelines given in ASTM E 1886 and ASTM E 1996, the following requirements shall be met:

6.1 Test specimens shall be the largest size for which approval is desired.

6.2 To be approved to this specification, mullions shall be tested as part of the test samples. Testing of one mullion profile or configuration does not qualify any other mullion profile or configuration (except as allowed for in Section 8.5).

EXCEPTION: *The addition of cladding or a wrapped material to the mullion will not constitute a change in profile or configuration, providing material is not removed from the mullion.*

Mullions shall only be qualified to the largest window or door (width and height) on which testing is performed.

6.3 To be approved to this specification, true muntins shall be tested as part of the test samples. Testing of one muntin profile or configuration does not qualify any other muntin profile or configuration. Any variation in muntin joinery, wall thickness or glazing application can only be approved by testing the variation(s) through the entire procedure outlined in ASTM E 1886.

7.0 TEST SPECIMEN PREPARATION

7.1 Test specimen shall be mounted using anchors and anchor spacing for which approval is desired. To qualify more than one anchor type, at least one of the test samples must be tested with that anchor and its surrounding building substrate for which qualification by this standard is sought.

7.2 Test specimen shall not incorporate anchors, supports or stiffeners that are not intended to be included during normal installation.

8.0 QUALIFICATION OF ALTERNATE CONSTRUCTIONS

8.1 The qualification of the following alternate constructions or details shall be accomplished by successful completion of all requirements of Section 6.0 (no additional testing is required).

a) Simulated divided lites
b) Thicker glass of same type
c) Reflective coatings, low-emissivity coatings, frits, and tints of same glass type
d) Increase in thickness of interlayer
e) Change of color or opacity of interlayer
f) Non-structural cosmetic changes (i.e. escutcheons)
g) Change of glazing back bedding color from the same manufacturer, provided the new color is made from the same or equivalent back bedding compound

8.2 The following alternate constructions or details shall be qualified by successful completion of all requirements of Section 6.0 on one additional specimen. Multiple construction changes made to discrete specimens shall be tested in combination to ensure the compatibility of the intended combination.

a) Alternate anchorage details (size, spacing, type or substrate)
b) Change of glazing back bedding manufacturer (same or equivalent back bedding compound)
c) Change in glass type
d) Change in interlayer manufacturer
e) Change insulating glass to monolithic
f) Spacer change
g) Change in hinging hardware
h) Change in locking hardware
i) Insulating glass sealant changes provided requirements of AAMA/NWWDA 101/I.S .2-97, AAMA/WDMA 101/I.S. 2/NAFS-02, AAMA/WDMA/CSA 101/I.S. 2/A440-05 or AAMA/WDMA/CSA 101/I.S. 2/A440-08 are maintained

EXAMPLE: *An additional specimen qualifies a change in back bedding, a second additional specimen qualifies a different interlayer manufacturer; because the alternate back bedding was not tested with the alternate interlayer, the combination of the two alternates shall not be qualified by this testing scenario.*

8.3 The anchorage details (size, spacing or substrate) shall be permitted to qualify by submittal of calculations according to accepted engineering practice.

8.4 Alternate constructions not listed in Sections 8.1 or 8.2 shall be qualified with three test specimens successfully completing the requirements of this standard. Alternate constructions qualified by Section 8.2 shall not be allowed the opportunity of one replacement specimen that ASTM E 1996 permits for the three base specimens.

8.5 QUALIFICATION OF MULLED ASSEMBLIES IN CONJUNCTION WITH AAMA 450

8.5.1 Mulled assemblies shall be qualified by this document if all of the following conditions are met:

a) The largest assembly with the longest mullion shall be impacted at its midpoint
b) The assembly shall be certified to AAMA 450
c) Individual units making up the assembly shall all comply with this document

8.5.2 Impact resistant assemblies meeting the requirements of Section 8.5.1 shall be permitted to follow the same rules of unit substitution that are permitted by AAMA 450.

8.5.3 Qualification of an assembly with the longest mullion shall qualify that mullion for other assemblies containing that same mullion at a shorter length. Section 8.5.2 shall apply to these other assemblies.

9.0 TEST REPORT

9.1 In addition to the items required by ASTM E 1886 and ASTM E 1996, the following items shall be detailed in the test report:

9.1.1 A reference to the test report showing compliance with the gateway requirements of Section 1.3.

9.1.2 A description of the anchor type and spacing used during the test with any necessary drawings to adequately describe anchor details and accurate anchor locations.

9.1.3 When used, accurate identification of mullions and muntins including extrusion drawings shall accompany the test report.

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Changes from AAMA 506-06 to AAMA 506-08

- Various editorial changes were made
- Removed the reference to storefronts and curtain walls
- Allowed an exception in Section 6.2
- Added, “surrounding building substrate for which qualification by this standard is sought” in Section 7.1
- Added new Section 8.0, “Qualification of Alternate Constructions”

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AMERICAN ARCHITECTURAL

AAMA 506-11

Voluntary Specifications for Impact and Cycle Testing of Fenestration Products





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A M E R I C A N A R C H I T E C T U R A L

AAMA 800-05

Voluntary Specifications and Test Methods for Sealants



M A N U F A C T U R E R S A S S O C I A T I O N

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AMERICAN ARCHITECTURAL

AAMA 800-08

Voluntary Specifications and Test Methods for Sealants





MANUFACTURERS ASSOCIATION

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AMERICAN ARCHITECTURAL

AAMA 800-10

Voluntary Specifications and Test Methods for Sealants





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MODIFICATION TEXT:

AAMA	American Architectural Manufacturers Association 1827 Walden Office Square, Suite 550 Schaumburg, IL 60173-4268	
Standard reference number	Title	Referenced in code section number
101/I.S.2-97	Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors	1008.1.7 1710.5.1 1710.5.3 Table 1710.5.2 2411.3.2.1
101/I.S.2/NAFS-02	Voluntary Performance Specification for Windows, Skylights and Glass Doors	1710.5.1 1710.6 1710.5.3 Table 1710.5.2 2405.5 2612.2
AAMA 2502-07	Comparative Analysis Procedure for Window and Door Products	1710.5.3 2411.3.2.6
~~AAMA 103 - 09 or 10 or 11~~	~~Procedural Guide for Certification of Window and Door Assemblies, Sec. 2 - Engineering Design Rules~~	~~2411.3.2.6~~

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AMERICAN ARCHITECTURAL

AAMA/NPEA/NSA 2100-11

Specifications for Sunrooms









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S5142

Date Submitted	7/16/2012	**Section**	202	**Proponent**	Ken Cureton
Chapter	2	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	Yes				

Related Modifications

None

Summary of Modification

Modify SECTION 202 (Structural TAC)

Rationale

To comply with s. 553.73(7)(a) Florida Statutes, the proposed modification will supplement the most current version of the International Existing Building Code (IEBC) base code with Florida specific requirements in accordance with the Commission's approved code change process for the update to the 2013 Florida Building Code. The proposed modification is necessary in order to maintain compliance with Florida Statutes.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

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

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Requirements

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Does not degrade the effectiveness of the code

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

The proposed code change was submitted in accordance with the Commission's update process for the 2013 FBC in order to maintain compliance with Florida Statutes.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5142-A1

Proponent Paul Coats **Submitted** 9/21/2012 **Attachments** Yes Coats

Text of Modification

In the definition for Conventional Light Frame Construction, revise item 4 as follows:

Wind speeds shall not exceed ~~100~~ 115 mph (~~161~~ 185 km/hr) (3-second gust)

Rationale

The current definition in the 2010 FBC reflects the correct wind speed of 115 mph, which is based on the ASCE 7-10 wind speed basis, and this corrects what is an apparent oversight, and will not change the current FBC.

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

yes

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

yes

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

yes

Does not degrade the effectiveness of the code

yes

General Comment - 08/09/2012 - 09/23/2012

S5142-G1

Proponent Paul Coats **Submitted** 9/21/2012 **Attachments** No

Comment:

The definition for Conventional Light Frame Construction in the Existing Building Code contains requirements for new construction, which is innappropriate for a definition, especially in an existing building code. It also differs from the definition in the FBC, though the limitations are the same as Section 2308.2 of the IBC. This is not an appropriate definition and should just be deleted -- the existing building code should just defer to the FBC.

General Comment - 08/09/2012 - 09/23/2012

S5142-G2

Proponent BOAF CDC **Submitted** 9/23/2012 **Attachments** No

Comment:

1. What statute?

2. The amendment does not demonstrate by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variations addressed by the foundation code. Per FS 553.73 (7) (g)

3. Where did the information for this code change come from?

4. The information was not presented to justify this code change.

5. Because a code provision was in the 2010 FBC does not make it Florida specific.

Modify **SECTION 202** as follows:

CONVENTIONAL LIGHT-FRAME CONSTRUCTION.

Limitations. Buildings are permitted to be constructed in accordance with the provisions of conventional light frame construction, subject to the following limitations:

1. Buildings shall be limited to a maximum of three stories above grade.

Exception: Solid blocked cripple walls not exceeding 14 inches (356 mm) in height need not be considered a story.

2. Bearing wall floor-to-floor heights shall not exceed 10 feet (3048 mm).

3. Loads as determined in Chapter 16 of the Florida Building Code, Building shall not exceed the following:

3.1. Average dead loads shall not exceed 15 psf (718 N/m2) for roofs and exterior walls, floors and partitions.

3.2. Live loads shall not exceed 40 psf (1916 N/m2) for floors.

4. Wind speeds shall not exceed 100 mph (161 km/hr)(3-second gust).

5. Roof trusses and rafters shall not span more than 40 feet (12 192 mm) between points of vertical support.

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

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

Site built single- family residential structures. This term shall mean site built single family detached residential structures.

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

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

WORK AREA. That portion or portions of a building consisting of all reconfigured elements, systems or spaces as indicated on the construction documents. Work area excludes other portions of the building where incidental work entailed by the intended work must be performed and portions of the building where work not initially intended by the owner is specifically required by this code.

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In the definition for Conventional Light Frame Construction, revise item 4 as follows:

Wind speeds shall not exceed ~~100~~ 115 mph (~~161~~ 185 km/hr) (3-second gust)

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Date Submitted	7/31/2012	**Section**	202	**Proponent**	Jim Heise
Chapter	2	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

give clear definition of "sunroom"

Rationale

The term "sunroom" is not in the definition section of the base code, and is very much a Florida product.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as this definition is currently being acknowledged by the 2010 FBC.

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

No impact as this definition is currently being acknowledged by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as this definition is currently being acknowledged by the 2010 FBC.

Requirements

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

Contributes to public health, safety and welfare by clarifying what a sunroom is.

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

This will improve the code by reinstating this definition that exists in the Florida Code with the current edition.

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5854-G1

Proponent BOAF CDC **Submitted** 9/23/2012 **Attachments** No

Comment:

The provision this is based upon has sunset with the other Florida Changes to the 2010 FBC.

The amendment does not demonstrate by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variations addressed by the foundation code. Per FS 553.73 (7) (g)

The proposed amendment was does not appear to have been submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

Nor is there any indication in the monograph titled “Florida Supplement to the 2012 IEBC” developed by staff to indicate what would be added to the 2013 FBC,E

Sunroom.

1. A room with roof panels that include sloped glazing that in a one-story structure added to an existing dwelling with an open or glazed area in excess of 40 percent of the gross area of the sunroom structure's exterior walls and roof.

2. A one-story structure added to a dwelling with solid roof panels without sloped glazing. The sunroom walls may have any configuration, provided the open areas with operable of fixed glass or windows or side hinged or sliding glass doors of the longer wall and one additional wall is equal to at least 65 percent of the area below 6 foot 8 inches of each wall, measured from the floor.

For the purpose of this code the term sunroom as used herein shall include conservatories, sunspaces, solariums and porch or patio covers or enclosures.

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Date Submitted	7/31/2012	**Section**	202	**Proponent**	T Stafford
Chapter	2	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

New definitions for correlation with proposed new Chapter 17.

Rationale

This proposal is a correlation with Mod 5888. It adds new definitions that are relevent to Mod 5888.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This prescriptive modification greatly facilitates plans review and inspection by providing a standardized methodology.

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

There is no cost unless a building or property owner voluntarily opts for a gable end retrofit.

Impact to industry relative to the cost of compliance with code

There is no cost to industry for compliance.

Requirements

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

Gable ends are a known weakness in the vast majority of buildings not constructed and inspected to modern high wind standards. Strengthening gable ends improves the safety of occupants of buildings at risk and occupants of nearby buildings and it improves the general welfare of the public.

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

The modification provides a prescriptive method for strengthening gable ends that reduces the cost of retrofitting by not requiring a reinvention of the method and facilitating building inspections by the codification of a standard retrofit measure.

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

There is no discrimination of materials or products.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

General Comment - 08/09/2012 - 09/23/2012

S5889-G1

Proponent BOAF CDC **Submitted** 9/23/2012 **Attachments** No

Comment:

Retrofit, this is the Voluntary Gable End Bracing.

The amendment does not demonstrate by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variations addressed by the foundation code. Per FS 553.73 (7) (g) There is no supporting data

Additionally the Roof section definition is incomplete, if it is supposed to match the 2010 FBC, E.

RETROFIT. The voluntary process of strengthening or improving buildings or structures, or individual components of buildings or structures, for the purpose of making existing conditions better serve the purpose for which they were originally intended or the purpose that current building codes

intend.

ROOF SECTION. A separating or division of a roof areaby existing expansion joints, parapet walls, flashing (excluding valley), difference of elevation (excluding hips and ridges), roof type or legal description; not including the roof

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S5889 Text Modification

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SECTION 1701
GENERAL

1701.1 Purpose. This chapter provides prescriptive methods for partial structural retrofit of an existing building to increase the resistance of gable end walls to out-of-plane wind loads. It is intended for voluntary use and for reference by mitigation programs. The provisions of this chapter do not necessarily satisfy requirements for new construction. Unless specifically cited, the provisions of this chapter do not necessarily satisfy requirements for structural improvements triggered by addition, alteration, repair, change of occupancy, building relocation or other circumstances.

1701.2 Eligible condition. The provisions of this chapter are applicable to buildings that meet all of the following eligibility requirements:

1. The building is Occupancy R3 (1-2 family dwellings)
2. The building includes one or more wood-framed gable end walls constructed using platform framing techniques.
3. The building shall have a *mean roof height* of 35' or less.
4. The building includes attic-framing members in the area where retrofit members will be installed shall be made of conventional lumber assembled with nails or the like or with truss plates.
5. The wall below a gable end wall being retrofitted shall be made of conventional lumber assembled with nails or the like or with truss plates or the wall shall be made of concrete or masonry.
6. Each gable end wall being retrofitted has or will be provided with studs or vertical webs spaced 24 inches on center maximum.
7. Each gable end wall being retrofitted has a maximum height of 16 ft.
8. The building is or would be assigned to risk category I or II per *Florida Building Code* Table 1704.5.
9. The ceiling diaphragm of the retrofitted building in the area of the retrofit shall be comprised of minimum ½ inch gypsum board, minimum nominal 3/8 inch wood structural panels, or plaster.
10. The roof diaphragm of the building in the area of the retrofit shall be of minimum nominal 4'x8' paneling made of plywood, oriented strand board, or similar, or boards butted to each other along their long edges and ends.

1701.3 Compliance. All modifications required for conformance with this chapter shall be designed and constructed in accordance with the *Florida Building Code* or *Florida Residential Code* provisions for new construction except as specifically modified by this chapter.

SECTION 1702
DEFINITIONS

ADDED STUD. Studs installed in a gable end wall to provide the required minimum spacing between existing wall studs prior to adding any retrofit studs needed to brace or stiffen the gable end wall.

ATTIC-FRAMING MEMBERS. Structural members such as ceiling joists, rafters, and roof trusses that support ceiling diaphragms or roof decking.

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BALLOON FRAMING. A type of wall framing where vertical wall framing members of the gable end wall and the rectangular wall below are continuous from the top of the gable end wall to the bottom of the rectangular wall below.

COMPRESSION BLOCK. A piece of lumber used to restrain an existing or retrofit stud against movement or deflection toward the interior of the building, attached to a lateral brace and bearing directly against the primary or retrofit stud.

EXISTING STUD. A stud in a gable end wall that already exists before the installation of added studs or conducting gable end bracing and stiffening using lateral braces or retrofit studs.

GABLE END WALL. The triangular wall segment at a gable end whose framing members may be conventionally framed, balloon framed, or framed with a truss.

GABLE END TRUSS. A roof truss at an exterior wall with lumber members oriented with their wide faces parallel to the plane of the wall.

GUSSET ANGLE BRACKET. Metal connectors intended by the manufacturer to be connect materials at right angles to each other supplied by the manufacturer with fasteners.

LATERAL BRACE. A lumber member typically installed horizontally on the top of attic floor framing members or on the bottom of pitched roof framing members used to transfer both compression and tension loads applied by a gable wall existing, added or retrofit stud into either the ceiling or roof diaphragm.

NAIL PLATE. A manufactured metal plate made of galvanized steel with factory punched holes for fasteners. A nail plate may have the geometry of a strap.

PLATFORM FRAMING. A type of wall framing where vertical framing members of the gable end wall terminate at or above the top plate on the rectangular wall below the gable end wall.

PRIMARY STUD. An existing or added stud as defined above. A vertical member installed against the gable end wall sheathing and connected to the top and bottom chords of the gable end framing that provides the required minimum spacing of structural members supporting the wall sheathing.

RETROFIT. The process of strengthening or improving buildings or structures, or individual components of buildings or structures for the purpose of making existing conditions better serve the purpose for which they were originally intended or the purpose that current building codes intend.

RETROFIT STUD. A vertical lumber member used to supplement the strength or stiffness of an existing or added (primary) stud.

STUD-TO-PLATE CONNECTOR. A manufactured metal connector designed to connect studs to lumber plates.

SECTION 41703
MATERIALS

1703.1 Existing materials. All existing lumber framing members to which retrofit components will be attached shall be in sound condition suitable for their purpose. Ceiling and roof diaphragms in the area of lateral braces shall be in sound condition suitable for their purpose.

1703.2 New and replacement materials. All new and replacement materials shall comply with the requirements of the *Florida Building Code* or the *Florida Residential Code* as applicable.

1703.3 Material specifications for retrofits. Materials for retrofitting gable end walls shall comply with Table 1703.3.

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TABLE 1703.3
MATERIAL SPECIFICATIONS FOR RETROFITS

Component	Minimum Size or Thickness	Minimum Material Grade or Type	Minimum Capacity
All lumber	2 inch nominal thickness Minimum depth will vary according to application	#2 Spruce-Pine-Fir (S) or better	Not applicable
Gusset angle bracket	14 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood, wood-to-CMU, or wood-to-concrete.	350 pounds uplift and lateral load
Stud-to-plate connector	14 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood	500 pounds uplift
Metal connectors	20 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood, wood-to-CMU, or wood-to-concrete.	Not applicable
Nail plates and straps	20 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood.	Not applicable

1703.4 Nominal sizes. For the purposes of this code, where dimensions of lumber are specified, they shall be deemed to be nominal dimensions.

1703.5 Fasteners. Fasteners shall meet the requirements of Table 1703.6, Sections ~~s~~ 1703.6.1, and Section 1703.6.2, and shall be permitted to be screws or nails meeting the minimum length requirement shown in the figures and specified in the tables of this chapter. Fasteners used to secure connectors shall be those approved by the manufacturer.

1703.5.1 Screws. Unless otherwise indicated in this Appendix, screw sizes and lengths shall be in accordance with Table 1703.5. Permissible screws include deck screws and wood screws. Fine threaded screws, finish screws, or drywall screws shall not be permitted.

1703.5.2 Nails. Unless otherwise indicated in this Chapter, nail sizes and lengths shall be in accordance with Table 1703.5.

TABLE 1703.5
NAIL AND SCREW REQUIREMENTS

Minimum Fastener Length	Fastener Type	Shank Diameter (Neglecting galvanizing) Minimum and maximum	Minimum Length of thread	Minimum Head Diameter
1-1/2 inches	#9 screws	0.177 inches	1-1/4"	0.28 inches
	8d common nails	0.131 inches	Not applicable	0.28 inches
3 inches	#9 screws	0.177 inches	1-1/2"	0.28 inches
	10d common nails	0.148 inches	Not applicable	0.28 inches

For SI: 1 inch = 25.4 mm

1703.6. Metal connectors and nail plates. Metal plate connectors, nail plates, stud-to-plate connectors, straps and anchors shall be manufactured from galvanized steel and be products *approved* for connecting wood-to-wood or

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wood-to-concrete as appropriate for the application. Nail plates shall have holes sized for a minimum of 8d or 10d nails or #9 screws.

SECTION 1704
GENERAL REQUIREMENTS AND MEANS OF RETROFIT

1704.1 General requirements. The strengthening scheme provided by this chapter requires the installation of lateral braces, retrofit studs, and other load path components to supplement existing framing. Figure 1704.1 shows the general schematic arrangement of the various elements. Lateral braces and retrofit studs shall be installed at each primary stud as specified in Section 1706 and Section 1707. At each primary stud subject to strengthening, the retrofit configuration shall be determined in accordance with Table 1704.1. Retrofitting shall be in accordance with Section 1705 for installation of added studs where existing ones are too far apart, Section 1706 for the establishment of locations for retrofits and the installation of retrofit studs that strengthen primary studs, Section 1707 for the installation of lateral braces that connect ceiling and roof diaphragms via attic-framing members, Section 1708 for the two methods for the installation of straps that connect the ends of retrofit studs to lateral braces, and Section 1709 for connection of a gable end wall to the wall below.

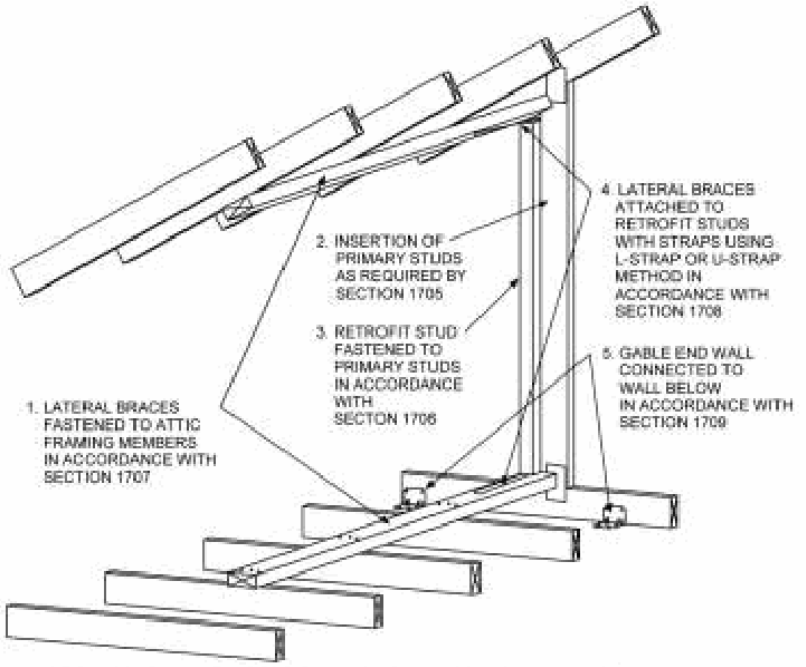


FIGURE 1704.1
GENERAL MEANS OF GABLE END RETROFIT

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TABLE 1704.1
RETROFIT CONFIGURATION AS A FUNCTION OF EXPOSURE CATEGORY, DESIGN WIND SPEED, AND STUD HEIGHT

RETROFIT ELEMENTS				SIZE AND NUMBER OF RETROFIT ELEMENTS Stud length limitations based on Exposure, Basic Wind Speed, and Configuration			
Exposure Category	Max 3-sec gust Basic Wind Speed (Interpolation is not permitted)	Connections of gable end wall to wall below. On center spacing (Section 1708)		Configurations A, B, C, or D			
		Gusset angle bracket	Fasteners to secure sill plate to wall	**A**	**B**	**C**	**D**
D	< or =130 mph	39"	14"	6'-11"	10'-11"	14'-3"	16'-0"
D	>130 - 140 mph	34"	12"	6'-7"	10'-5"	13'-7"	16'-0"
D	>140 - 150 mph	29"	10"	6'-2"	9'-9"	12'-10"	16'-0"
D	>150 - 160 mph	26"	9"	5'-11"	9'-1"	12'-0"	15'-4"
D	>160 - 170 mph	23"	8"	5'-6"	8'-7"	11'-4"	14'-9"
D	>170 - 180 mph	20"	7"	5'-2"	8'-1"	10'-8"	14'-2"
C	< or =130 mph	46"	16"	7'-4"	11'-6"	15'-1"	16'-0"
C	>130 - 140 mph	39"	14"	7'-0"	10'-11"	14'-5"	16'-0"
C	>140 - 150 mph	34"	12"	6'-8"	10'-5	13'-8"	16'-0"
C	>150 - 160 mph	30"	11"	6'-4"	9'-10"	13'-0"	16'-0"
C	>160 - 170 mph	27"	9"	5'-11"	9'-3"	12'-3"	15'-6"
C	>170 - 180 mph	24"	8"	5'-7"	8'-9"	11'-7"	15'-0"
B	< or =130 mph	63"	22"	8'-2"	12'-10"	16'-0"	(a)
B	>130 - 140 mph	54"	19"	7'-9"	12'-2"	15'-0"	(a)
B	>140 - 150 mph	47"	17"	7'-5"	11'-8"	15'-3"	16'-0"
B	>150 - 160 mph	42"	15"	7'-1"	11'-2"	14'-7"	16'-0"
B	>160 - 170 mph	37"	13"	6'-10"	10'-8"	14'-0"	16'-0"
B	>170 - 180 mph	33"	12"	6'-7"	10'-4"	13'-6"	16'-0"
Retrofit studs Minimum size and number (Section 1706)				2x4	2x6	2x8	2 each 2x8
Lateral brace above and below (top and bottom) Minimum size and number (Section 1707)				2x4	2x4	2x4	2 each 2x8
Retrofit Elements for **L-bent strap** applications (Section 1708.1)							
Fasteners at each end for strap connecting Retrofit studs to Lateral braces using 1-1/2 inch long fasteners complying with Table 1703.6 Minimum number				3	5	6	5 at each end of each strap
Fasteners to connected Compression blocks to Lateral braces using 3-inch long fasteners complying with Table 1703.6 Minimum number				4	6	7	5
Retrofit Elements for **U-bent strap** applications (Section 1708.2)							
Fasteners to connect straps to each edge of Lateral braces using 1-1/2 inch long fasteners complying with Table 1703.6 Minimum number				3	4	4	4 at each end of each strap

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

(a) Configuration C is allowable.

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SECTION 1705
ADDED STUDS

1705.1 Requirements for added studs. Along a platform framed gable end wall where an existing stud is longer than 3 feet and the distance (centerline to centerline) between that stud and an adjacent stud that is also longer than 3 feet is greater than 22-1/2 inches, an added stud shall be installed. This requirement also applies to the top truss of a piggyback truss assembly. The length of the stud shall be the maximum length of the stud itself exclusive of the depth of the top chord and bottom chord members. If an existing stud is interrupted by other members, such as by a diagonal in a gable end truss, it shall include pieces above and below the interrupting member to provide continuity from the top of the bottom chord to the bottom of the top chord of the gable end framing, or wood structural members shall be added to provide this continuity. If a lateral brace is being omitted as allowed in Section 1707.4.1, then the existing or added stud shall not be required to be continuous from an interruption to the location of the omitted lateral brace. Added studs shall have at minimum the same narrow and wide face dimensions as the existing studs.

1705.2 Placement of added studs. Added studs shall be installed with the same orientation as existing studs. Added studs of piggyback trusses shall align with required primary studs in the truss below.

1705.3 Attachment of added studs. In the case of conventional framing, each end of each required added stud shall be attached to the top and bottom plates. In the case of truss construction, each end of each required added stud shall be attached to the top and bottom chord of the truss. Attachments shall be made using a stud-to-plate metal connector with minimum uplift capacity of 175 pounds fastened with 1-1/2 inch long fasteners complying with Table 1703.5.

1705.4 Interrupted or short existing studs. Existing studs longer than 3 feet that extend to only one end of attic-framing members shall be retrofitted using the methods of Section 1706.6. Existing studs that are interrupted shall be retrofitted using the methods of Section 1706.7.

SECTION 1706
RETROFIT STUDS

1706.1 Requirements for retrofit studs. Except as allowed by Section 1706.5, a retrofit stud shall be installed at each primary stud longer than 3 feet where lateral braces can be installed using the methods of Section 1707. The size of retrofit studs shall be as required by Table 1704.1 for the appropriate retrofit configuration. Where straps are installed using the L-bent strap method of Section 1708.1.1, retrofit studs shall extend from the top of the lower lateral brace up to the bottom of the upper lateral brace except that a maximum gap of 1/8 inch is allowed at the bottom and ½ inch at the top. Where straps are installed using the U-bent method of Section 1708.1.2, retrofit studs shall extend beyond the ends of lateral braces such that lateral braces can fully butt against the retrofit studs.

Exception: A retrofit stud need not be added where the distance between it and an adjacent retrofit, primary stud would be less than 14-1/2 inches.

1706.2 Piggyback trusses. Primary studs of piggyback truss assemblies shall have retrofit studs sized and placed such that a single continuous retrofit stud is installed and fastened to the primary stud of both the lower and upper truss. Added studs shall be placed and fastened in accordance with Section 1705. The bottom chord of the upper truss shall be connected to the retrofit stud using an *approved* connector with minimum tension capacity of 175 pounds.

1706.3 Placement of retrofit studs. Retrofit studs and nailers can be placed on either side of primary studs. Retrofit studs shall be installed in accordance with one of the following methods.

1706.3.1 Method (a): Face to edge or to face method. Retrofit studs shall be placed immediately adjacent to primary studs as indicated in Figure 1706.3(a) such that retrofit studs overlap the edge or side of the primary stud by a minimum of 1-1/4 inches. Fasteners shall be placed in accordance with Section 1706.4.1.

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1706.3.2 Method (b): Butted retrofit stud method. Retrofit studs shall be placed such that the narrow face of retrofit studs butt against primary studs as indicated in Figure 1706.3(b). Retrofit studs shall be attached to primary studs with nail plates as indicated in Figure 1706.3(b). Nail plates shall be spaced and attached in accordance with Section 1706.4.2.

1706.3.3 Method (c): Offset retrofit stud method. Retrofit studs shall be placed such that the retrofit stud is offset from the primary stud by use of nail plates such that the nail plate can be affixed as indicated in Figure 1706.3(c) and Figure 1706.4.2 provided the fastening conditions of Section 1706.4.2 are met.

1706.3.4 Method (d): Nailer with retrofit stud method. Retrofit studs and existing studs shall be connected using minimum 2x4 nailers as indicated in Figure 1706.3(d) provided the following conditions are met. Nailers may be comprised of multiple members lengthwise.

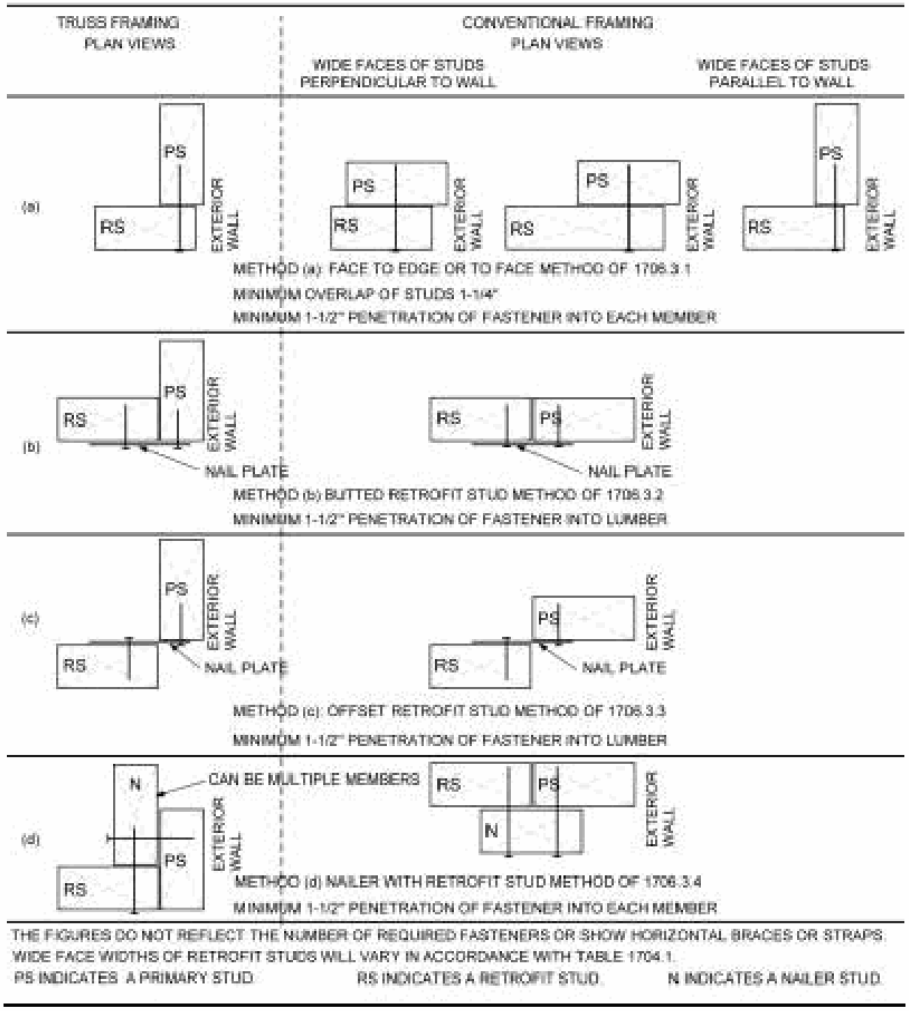
1. Both the primary stud and the retrofit stud shall be butted to nailers and both shall be fastened to the nailer with 3-inch fasteners. Fasteners connecting each stud to the nailer shall be spaced 6 inches on center.

2. Fasteners into nailers through the face of either member shall be offset vertically by a minimum of 2-3/4 inches.

3. Fasteners into nailers shall be a minimum of 2-3/4 inches but not more than 6 inches from the end of the shorter of the primary stud or retrofit stud to which they are fastened.

4. Fasteners shall be placed minimum ½ inch from the edges of studs.

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For SI: 1 inch = 25.4 mm

FIGURE 1706.3
PLACEMENT OF RETROFIT STUDS

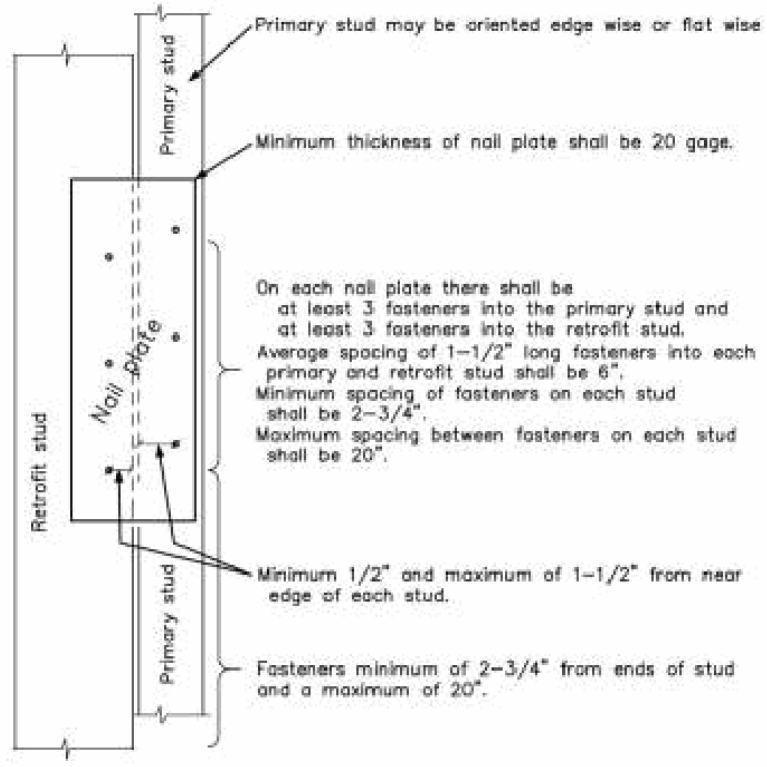
1706.4 Attachment of retrofit studs to primary studs. Retrofit studs, nail plates, and nailers shall be fastened in accordance with the following.

1706.4.1. Fastener attachments. Where retrofit studs are placed using the methods of Section 1706.3.1 or Section 1706.3.4, retrofit studs shall be attached to primary studs and nailers shall be attached to primary studs and retrofit studs using minimum 3-inch long fasteners. Fastener penetration into each member shall be a minimum 1-1/2 inch. Fasteners can be installed from either face of studs or nailers. Fasteners shall be a minimum of 2-3/4 inches on center along through the face of either member along the length of studs and from ends of studs, and a maximum of 6 inches on center, minimum ½ inch to edges of studs, and minimum 1 inch across studs. Fasteners into nailers from any direction shall be offset vertically a minimum of 2-3/4 inches. Fasteners shall be minimum 2-3/4 inches from ends of lumber.

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1706.4.2. Nail plate attachments. Where retrofit studs are placed using the methods of Section 1706.3.2 or Section 1706.3.3, nail plates shall be spaced and attached in accordance with all of the following requirements.

1. Nail plates shall be spaced such that vertical spacing between plates shall be a maximum of 20 inches.
2. There shall be at least 3 fasteners through each nail plate into both the primary and retrofit studs.
3. Fasteners used to secure nail plates to studs shall be a minimum 1-1/2 inch long and fasteners shall be a minimum of 2-3/4 inches and a maximum of 6 inches from the ends of retrofit studs.
4. Fasteners placed in nail plates shall be spaced a minimum of 2-3/4 inches along the length of lumber and 2-3/4 inch from ends of lumber.
5. Fasteners shall be placed a minimum of a ½ inch from the edges of the studs and a maximum of 1-1/2 inches from the abutting vertical edges of primary and retrofit studs.
6. Staggered fasteners used to secure nail plates shall be spaced horizontally a minimum of ½ inches.



For SI: 1 inch = 25.4 mm

FIGURE 1706.4.2
NAIL PLATE FASTENING

1706.4 Reduced width of retrofit studs. The broad face of retrofit studs may be reduced in width by methods of cutting, boring, or notching at any number of locations along their length provided that all of the following conditions are met.

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1. The wide face of retrofit studs shall be sized such that the remaining minimum width of the member at each location of reduced width shall not be less than that required by Table 1704.1.

2. The distance between segments of reduced width shall be a minimum of 8 inches and shall be allowable at the ends of retrofit studs.

3. The average spacing of fasteners connecting retrofit studs to existing studs shall be maximum 6 inches on center.

4. The minimum vertical distance between fasteners on studs shall be a minimum of 2-3/4 inches.

5. Retrofit studs reduced in width shall not be spliced within 12 inches of the location of reduced width. Splice members shall not be notched.

1706.6 Omitted retrofit stud – Ladder assembly. Where existing conditions prevent installation of a full length retrofit stud in accordance with Section 1706.1 or Section 1707.4, the retrofit stud and its associated two lateral braces shall be permitted to be wholly or partially omitted from that location by installation of a ladder assembly for Retrofit Configurations A and B as defined in Table 1704.1 provided all of the following conditions are met. This method is not allowed for Retrofit Configurations C or D.

1. No more than two ladder assemblies are permitted on a single gable end.

2. There shall be at least two retrofit studs and lateral brace assemblies on each side of the location where a retrofit stud is omitted.

3. Where both of the retrofit studs on each side an omitted retrofit stud would be required by Table 1704.1 to be 2x4, they shall both be 2x6. Where either retrofit stud on the side of an omitted stud would be required by Table 1704.1 to be 2x6, they both shall be 2x8. Where either retrofit stud on the side of an omitted stud would be required by Table 17o4.1 to be 2x8, they both shall be 2x10

4. Lateral braces adjacent to the omitted lateral brace shall be minimum 2x6 lumber extend over four roof framing members and be fastened to each of the four attic-framing member crossed using minimum four (4) 3-inch long fasteners. Fasteners shall be installed in accordance with Section 1706.4.

5. Ladder rungs shall be of minimum 2x4 lumber installed horizontally with their wide face oriented horizontally and installed to span between the retrofit studs on either side of the omitted retrofit stud. The edge of the ladder rung shall bear against the primary stud at the location of the omitted retrofit stud. Ladder rungs shall be vertically spaced a maximum of 16 inches on center.

6. Where ladder rungs cross and bear against the primary stud at the location of the omitted retrofit stud, they shall be attached to the primary stud using a stud-to-plate connector with a minimum capacity of 175 pounds in the direction perpendicular to the gable end wall. Ladder rungs shall be attached to the retrofit studs on both sides of the location where the retrofit stud is omitted using two 3-inch long fasteners driven through the retrofit stud and into the end of the ladder rung.

7. Notching of the ladder rungs shall not be permitted unless the net depth of the ladder rung is a minimum of 3-1/2 inches in the area of the notch.

1706.7 Interrupted primary studs. Where primary studs are interrupted because of existing conditions and where existing conditions permit, a retrofit stud shall be installed that bridges the interruption. It shall be attached to the primary stud both below and above the interruption, sized in accordance with Table 1704.1 for the total length, placed in accordance with Section 1706.3, and attached in accordance with Section 1706.4 along the portion of its length that is in contact with the primary stud.

1706.8 Short retrofit studs. Where existing conditions are such that a lateral brace installed in accordance with Section 1707 can only be installed at one end of a primary stud extends to a lateral brace at only a ceiling or a roof

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diaphragm such that a lateral brace can be installed in accordance with Section 1707, the method of retrofit shall comply with Section 1706.7.

1706.9 Spliced retrofit studs. Retrofit studs shall be permitted to be spliced provided all of the following conditions are met.

1. Retrofit studs shall be butted to one another at the splice joint and a minmum 4 foot length of splice member shall be centered at the butt joint.

2. Lumber splice members shall be nominal 2 inch lumber with the wide face width equal to or wider than the face width of the spliced retrofit studs.

3. Splice members shall be attached to each of the retrofit stud members on each side of the splice with minimum 7 rows of 3 fasteners for a total of 21 fasteners. Rows of fasteners shall be minimum 2-3/4 inches from the end of the splice member, minimum 2-3/4 inches from the splice joint and ends of members, and spaced evenly along the 18 inch splice overlap between these two limits.

SECTION 1707
LATERAL BRACES

1707.1 Requirements for lateral braces. At each end of a retrofit stud, a lateral brace shall be installed as indicated in Figure 1707.1(1) or Figure 1707.1(3) for trusses and Figure 1707.1(2) or Figure 1707.1(4) for conventionally framed gable end walls. Lateral braces shall be allowed to be omitted in accordance with Section 1706.6 or Section 1707.3. Alternative methods for providing lateral bracing are allowable in accordance with Sections 1707.4.1. Lateral braces shall be minimum 2x4 lumber except as required by Section 1707.4.1 or Section 1706.6.

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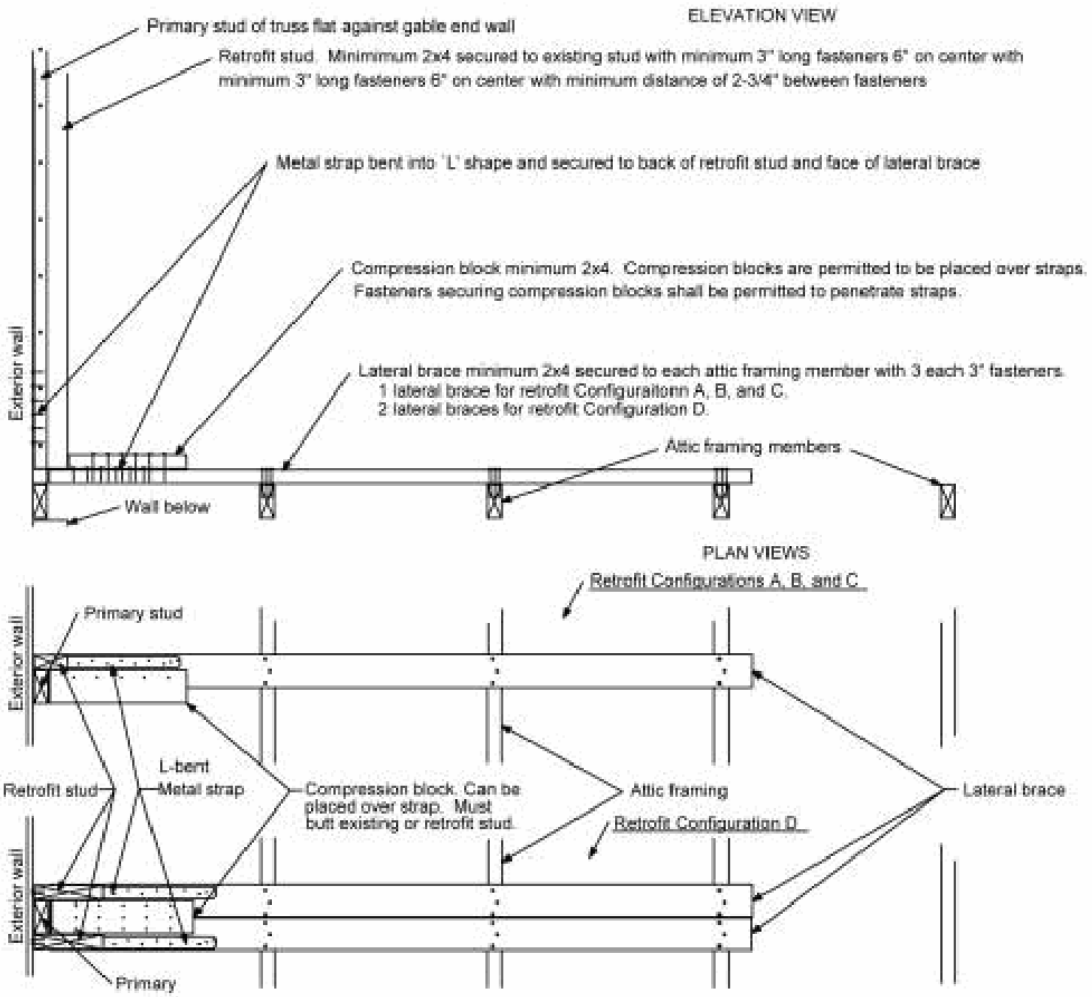


FIGURE 1707.1(1)
TRUSS GABLE END WALL WITH L-BENT STRAPS

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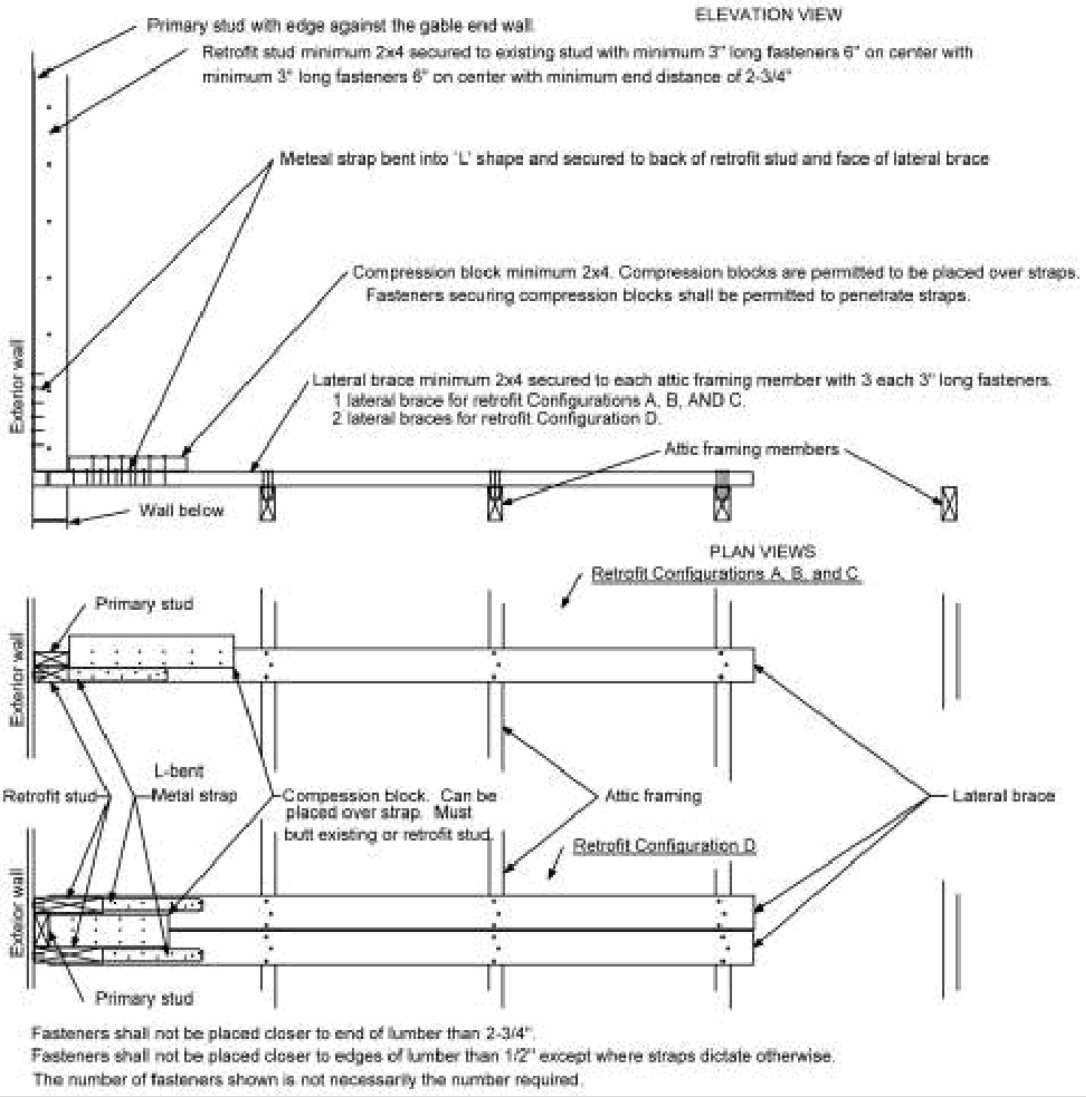


FIGURE 1707.1(2)
CONVENTIONALLY FRAME GABLE END WALL WITH L-BENT STRAPS

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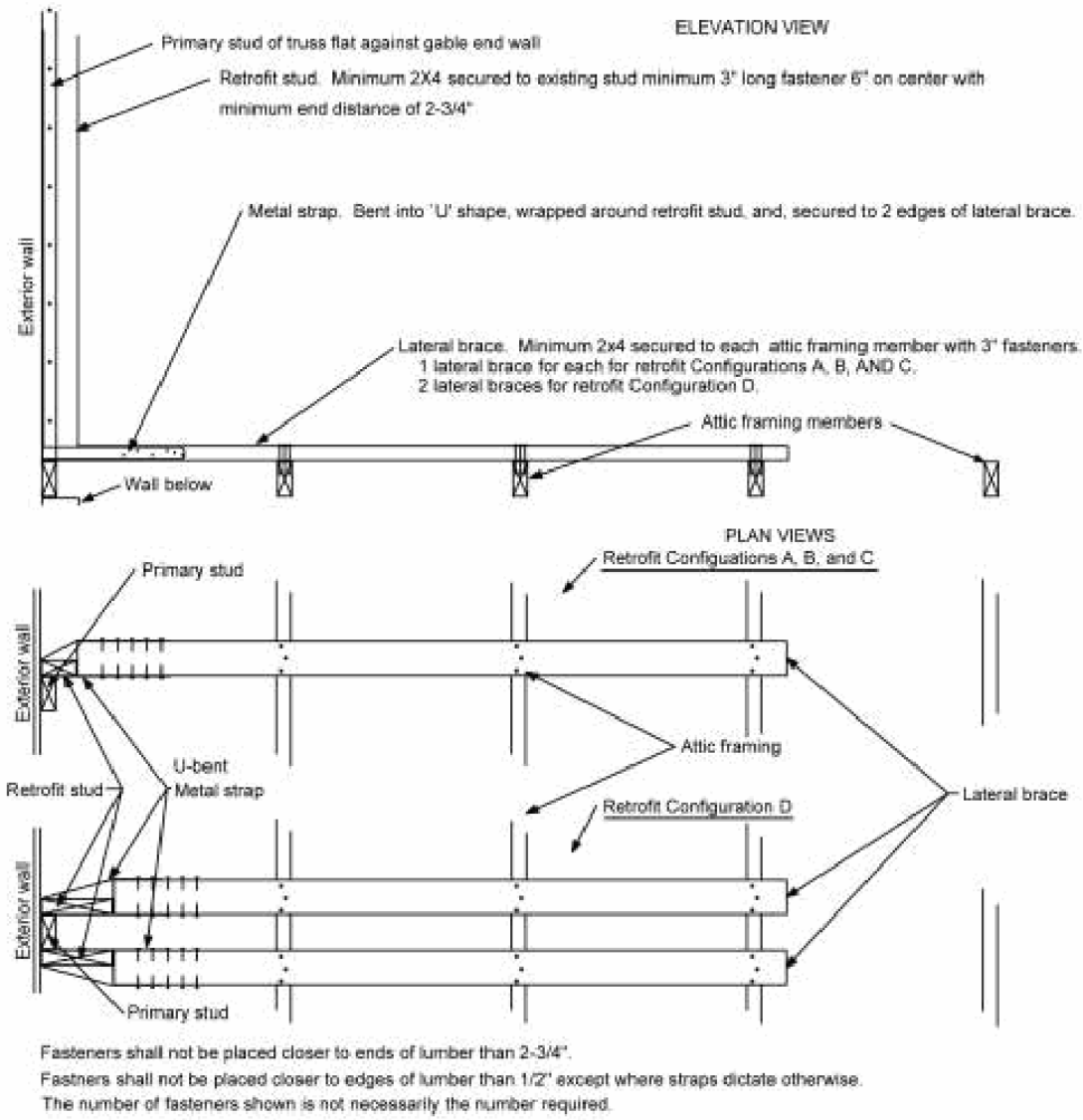


FIGURE 1707.1(3)
TRUSS GABLE END WALL WITH U-BENT STRAPS

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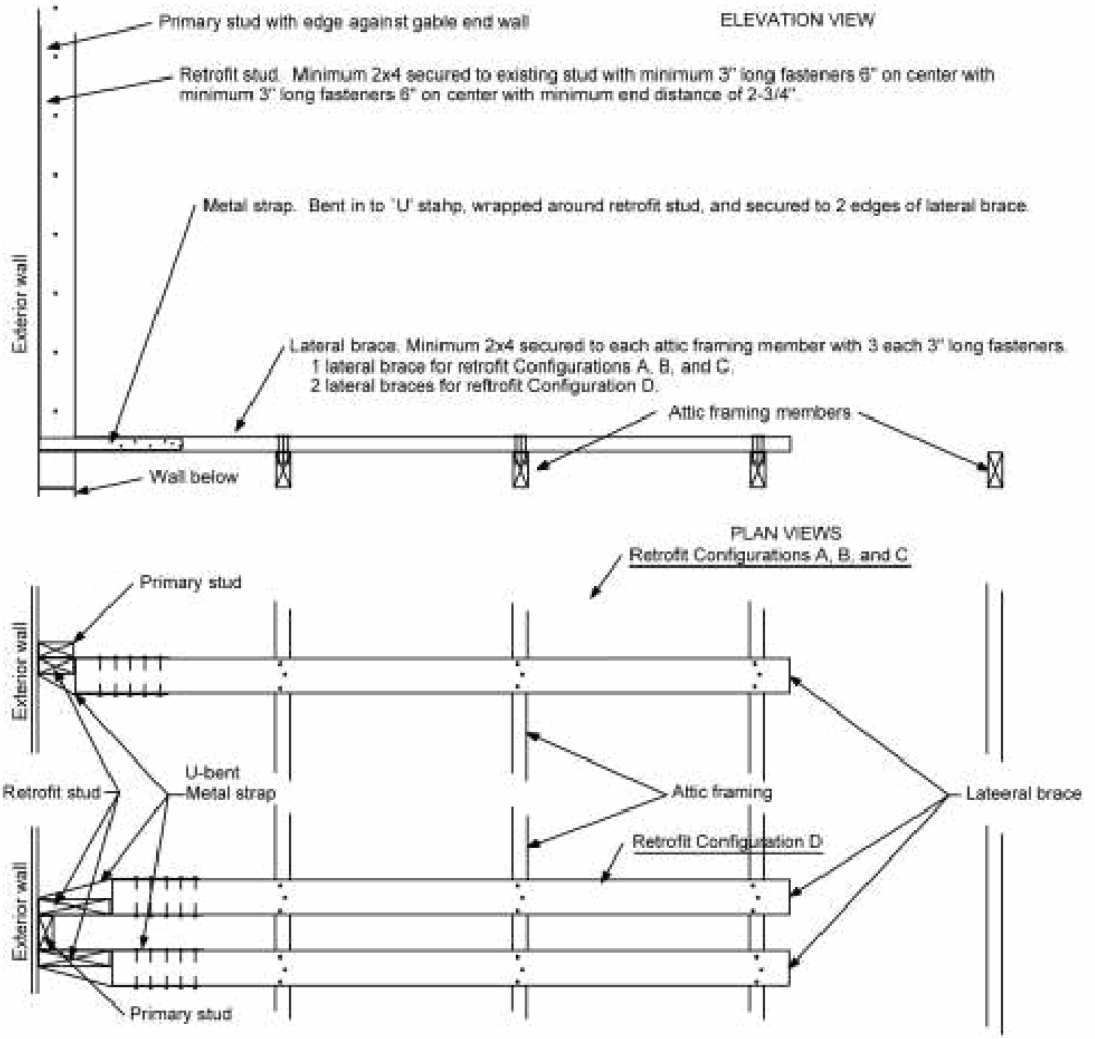


FIGURE 1707.1(4)
CONVENTIONALLY FRAME GABLE END WALL WITH U-BENT STRAPS

1707.2 Placement. Lateral braces shall be placed approximately perpendicular to the attic-framing members and extend so they are attached to a minimum of three attic-framing members. The attic-framing member farthest from the gable end wall shall be a minimum of 6 feet from the exterior sheathing or siding on the gable end wall. Lateral braces shall be installed with their wide faces across attic-framing members. Where the method of Section 1708.1 is used, lateral braces shall butt against the sheathing or siding of the wall. Where the method of Section 1708.2 is used, lateral braces shall butt against the retrofit studs.

Exception: Where existing conditions prevent placement of continuous lateral braces on attic-framing members, installation shall be in accordance with Section 1707.4.

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1707.3 Attachment of lateral braces. Lateral braces shall be attached to attic-framing members and attached to retrofit studs in accordance with this section.

1707.3.1 Attachment of lateral braces to attic framing or ridge ties. Lateral braces shall be attached to each of the attic-framing members or ridge ties that they cross with a minimum of three (3) 3-inch long fasteners. Fasteners shall be installed at least ½ inch from any edge of either the lateral brace or the attic frame member and spaced at least 1 inch apart across the width of the lateral brace as shown in Figure 1707.3.1. Lateral braces shall extend a minimum of 2-3/4 inches beyond the edge of the last attic-framing member to which they are attached.

1707.3.2 Attachment of lateral braces to retrofit studs. Attachment of lateral braces to retrofit studs shall be in accordance with Section 1708.

1707.4 Alternative installation. Where existing conditions prevent the placement of lateral braces as specified in 1707.2, the alternative installation methods of Section 1707.4.1, Section 1707.4.2, and Section 1707.4.3 shall be allowable.

1707.4.1 Omitted lateral brace. Where existing conditions prevent installation of lateral braces in accordance with Section 1707.2, lateral braces shall be permitted to be omitted for Retrofit Configurations A and B as defined in Table 1704.1 provided all of the following conditions are met. This method is not allowed for Retrofit Configurations C or D.

1. Lateral braces on each side of omitted lateral braces shall be 2x4 lumber placed approximately perpendicular to the attic-framing members and installed with their wide faces across attic-framing members. They shall be attached to a minimum of four (4) attic-framing members with attachment to the attic-framing member farthest from the gable end wall a minimum of 8 feet from the exterior sheathing or siding on the gable end wall.

2. The lateral brace on each side of an omitted lateral brace shall be fastened to each attic-framing member that they cross using three (3) 3-inch long fasteners. Fasteners shall be spaced a minimum of ½ inch from the edges of the lateral braces, a minimum of 2-3/4 inches from ends of lateral braces, and a minimum of 1 inch from adjacent fasteners.

3. A retrofit stud shall be installed in accordance with Section 1706.4 at the location of the omitted lateral brace. This retrofit stud and both of the retrofit studs on either side of the omitted lateral brace shall be sized in accordance with Table 1704.1 for the largest of the retrofit studs required at any of the three locations.

4. All three retrofit studs shall have their attic interior edges aligned such that they snuggly butt the strong back to be installed between the two lateral braces on either side of the omitted lateral brace.

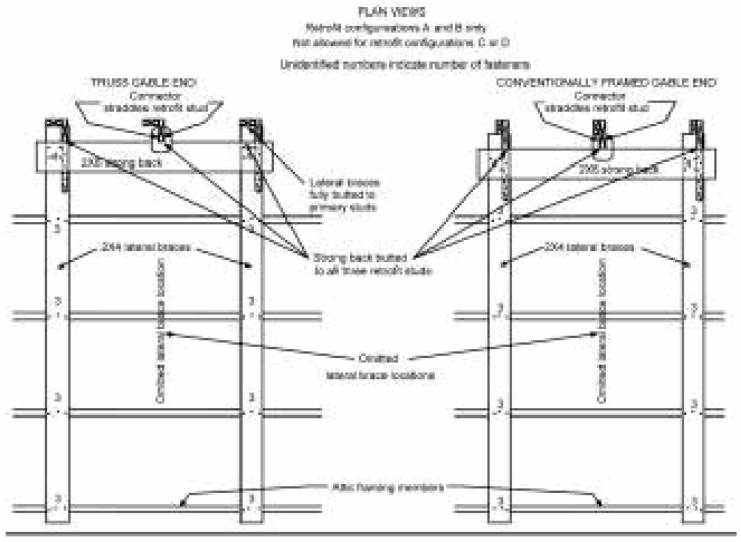
5. Retrofit studs adjacent to the omitted lateral brace shall be fastened to their corresponding lateral brace using straps in accordance with the L-bent strap method of Section 1708.1.1 except that a compression block is not required. The U-bent strap method of Section 1708.1.2 is not allowed unless U-bent straps are routed around the exterior face of primary studs.

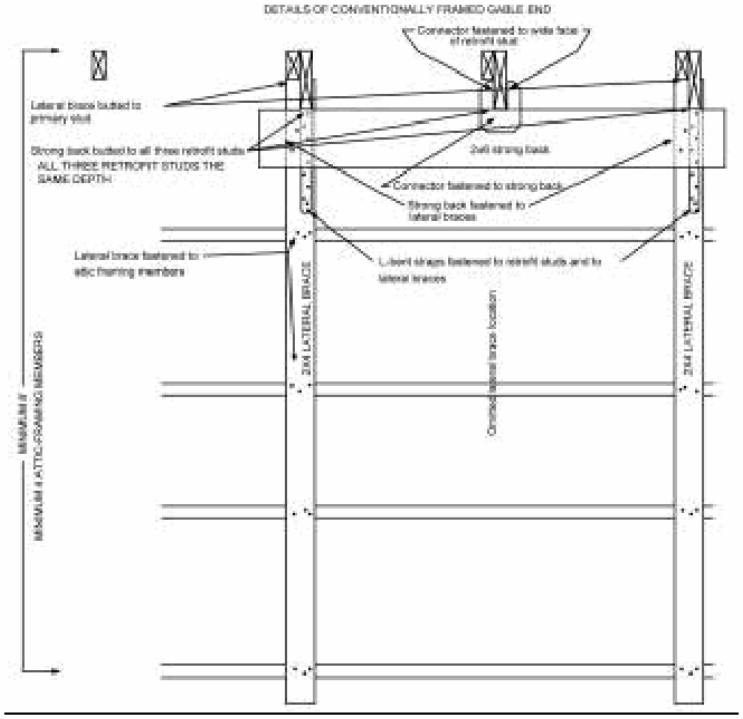
6. A strong back of minimum 2x6 lumber shall be installed parallel to the gable end and shall be located on and span between the lateral braces on the two sides of the omitted lateral brace. The strong back shall extend a minimum of 2-3/4 inches beyond the outer edges of the lateral braces and be snuggly butted against each of the three retrofit studs. The strong back shall be attached to each of the lateral braces on which it rests with four (4) 3-inch fasteners. The fasteners shall be placed a minimum 1/2 inch from all edges, a minimum of 2 inch spacing between fasteners, and a minimum of 2-3/4 inches from ends of the lumber members.

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7. The retrofit stud at the location of the omitted lateral braces shall be fastened to the strong back using an connector with minimum uplift capacity of 800 pounds as specified by the manufacturer for use with spruce-pine-fir or hem-fir lumber and installed such that this capacity is oriented in the direction perpendicular to the gable end wall.

8. Lateral braces at ends of strong backs shall be permitted to be interrupted in accordance with Section 1707.4.2; but shall not be permitted to be shortened using the alternative method of 1707.4.3.





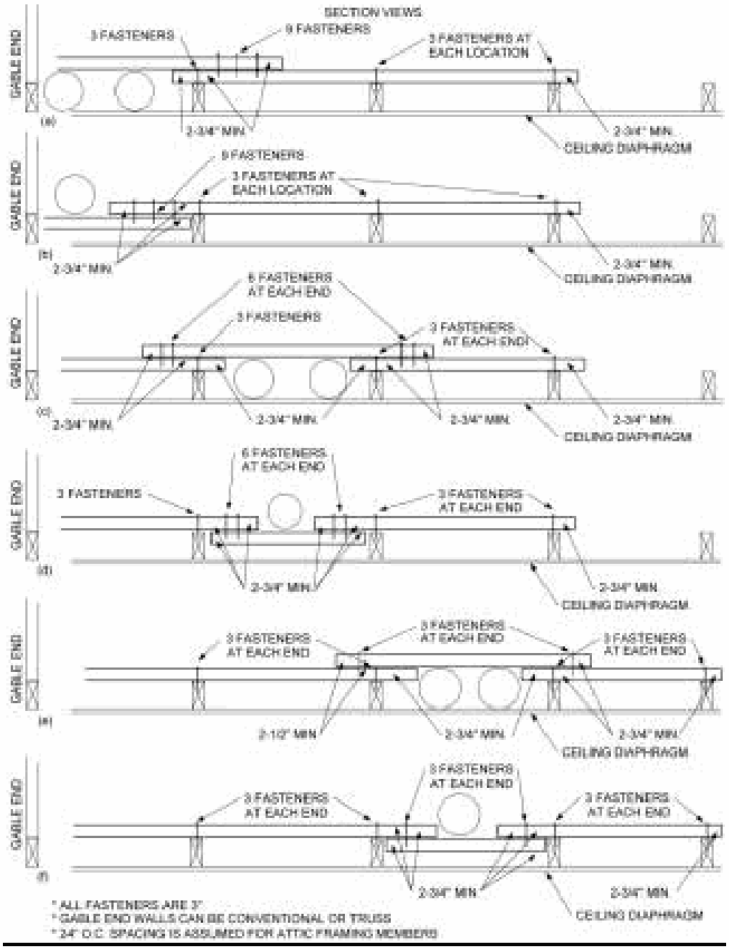
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FIGURE 1707.4.1
OMITTED LATERAL BRACE

1707.4.2 Interrupted lateral braces. Where existing conditions prevent the installation of lateral braces of required length in accordance with Section 1707.1, a splice member shall be permitted to be installed to bridge interruptions. Splice members shall be at minimum the same size lumber as the lateral braces they bridge. Although Figure 1707.4.2 illustrates the general methods that can be used where attic-framing members are spaced 24" o.c., the methods apply to other on center spacings. Splice members may extend beyond those shown and are allowed to be fastened to the main lateral brace segments farther than shown. Splice members shall be fastened at each end using the number of fasteners equal to the total number that would be required to be placed in total in that part of lateral braces more distant from the gable end wall. For a lateral brace that requires 3 fasteners at each roof framing members and installation across three roof framing members, the number of fasteners in the splice need not be more than nine fasteners if the interruption is between the gable end wall and the first attic-framing member; six fasteners if between the first and second framing members, and three fasteners if between subsequent interruptions. Fasteners shall be spaced 1/2 inch from the edges of lateral braces, 1 inch from each other, 1/2 inch from the edge of attic members, and minimum 2-3/4 inch from the ends of lateral braces and from the ends of splice members.



For SI: 1 inch = 25.4 mm

FIGURE 1707.4.2

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INTERRUPTED LATERAL BRACES

1707.4.3 Short lateral brace. Where conditions exist that prevent installation of lateral braces in accordance with Section 1707.4.1 or Section 1707.4.2, lateral braces shall be permitted to be shortened, except where the brace is adjacent to an omitted lateral brace of Section 1707.4.1, provided all of the following conditions are met.

1. The short lateral brace shall be installed across a minimum of two attic-framing members, be attached to an attic-framing member a minimum of 4 feet from the gable end wall. Where lateral braces are 2x4 they shall be fastened to each attic-framing member over which they cross with three (3) 3-inch fasteners. Where lateral braces are 2x6 or wider they shall be fastened to each attic-framing member over which they cross with four (4) 3-inch fasteners.

2. An anchor block shall be installed in each space between attic-framing members along the length of the lateral brace except for the space next to the gable end wall.

3. Anchor blocks shall be minimum 15/32 inch plywood, 7/16 inch OSB, or nominal 2 inch thick lumber #2 spruce-pine-fir or better.

4. Anchor blocks shall have minimum wide face dimension equal to the attic-framing members at the location where the anchor block is installed. Anchor blocks shall extend between attic-framing members and butt against them or their truss plates with a maximum gap of 1/8 inch.

5. Anchor blocks shall be installed on lateral braces with their wide face on the narrow face of lateral braces. Anchor blocks shall be placed on lateral braces with their attic interior edge flash with the attic interior face of lateral braces. They are permitted to be placed on different edges of lateral braces.

6. Anchor blocks shall be fastened to lateral braces with a single row of 8d common nail, 10d common nails or #9 screws with minimum penetration into lateral braces equal to the thickness of the anchor block or 1 inch whichever is greater. The minimum number of fastener shall be the maximum that can be placed in a single row with minimum 2-3/4 inch distance between fasteners and 2-3/4 inch distance to ends of anchor blocks except that the number of fasteners need not exceed seven per anchor block. For nominal 2 inch thick lumber anchor blocks, the number of fasteners need not exceed three fasteners per anchor block.

1707.5 Lateral brace connections to webs of trusses. Where existing conditions prevent installation of lateral braces on top or bottom chords of trusses, they shall be permitted to be installed on diagonal webs or vertical members of trusses provided all of the following conditions are met.

1. Lateral braces shall be positioned as close to the ceiling or roof diaphragms as existing conditions permit without altering trusses or any of their components.

2. Anchor blocks shall be installed between each pair of attic-framing members along the length of the lateral brace except for the framing member space next to the gable end wall. Anchor blocks can be installed on the narrow or wide face of lateral braces.

3. Anchor blocks shall be minimum 15/32 inch plywood, 7/16 inch OSB, or nominal 2 inch thick #2 spruce-pine-fir lumber or better.

4. Anchor blocks shall be sized to extend towards the nearby ceiling or roof diaphragm to within 3-1/2 inches of the diaphragm. Anchor blocks shall butt against chords or diagonals or vertical webs of trusses or truss plates with a maximum gap of 1/8 inch.

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5. Anchor blocks shall be fastened to lateral braces with 8d common or 10d common nails or #9 screws with minimum penetration into lateral braces equal to the thickness of the anchor blocks or 1 inch whichever is greater. The minimum number of fastener shall be the maximum that can be placed in a row with a minimum 2-3/4 inch distance between fasteners and 2-3/4 inch distance to ends of anchor blocks except that the number need not exceed three fasteners for nominal 2 inch thick lumber anchor blocks.

1707.6 Installation at truss ridges. Where existing conditions prevent installation of lateral braces near the peak of roofs, ridge ties made of minimum 2x4 members shall be installed horizontally on faces of trusses to provide anchorage for a required lateral brace. The bottom surfaces of added ridge tie members shall be aligned so that they will support a continuous lateral brace and be installed a maximum of 4 inches below limiting existing conditions for any of the trusses used to support the lateral brace. Ridge ties shall be installed on a minimum of three trusses and on every truss member over which lateral braces pass and be attached to an attic-framing member at least 6 feet from the exterior sheathing or siding on the gable end wall. Ridge ties shall be placed on alternate sides of trusses. Ridge ties used to support lateral braces shall be fastened to each top chord member of each truss using two (2) 3-inch long fasteners and to any other truss members they cross using three (3) 3-inch long fasteners. Fasteners shall be spaced a minimum ½ inch from edges of all members and minimum of 1 inch from each other. Lateral braces shall be attached to ridge ties as required by Section 1707.3.1.

1707.8 Piggyback trusses. Piggyback truss assemblies, trusses composed of two trusses one above the other, shall be retrofitted such that a single continuous retrofit stud is installed and fastened to the primary studs of both the lower and upper truss. Primary studs shall be placed and fastened in accordance with Section 1705. The bottom chord of the upper truss shall be connected to the retrofit stud using a connector with minimum 175 pound uplift capacity.

1707.9 Outlookers. Where outlookers exist to support a gable roof overhang, the out lookers shall be attached to the gable end truss or rafter using a connector with a minimum 175 pound uplift capacity. Where the end of the out looker butts against an interior truss or rafter, the end shall be connected to the truss or rafter using a joist hanger or U shaped metal connector with a minimum capacity of 175 pounds.

SECTION 1708
ATTACHMENT OF LATERAL BRACES TO RETROFIT STUDS

1708.1 Attachment of lateral braces to retrofit studs. The top and bottom of each retrofit stud shall be attached to a lateral brace with a minimum 1-1/4 inch wide *approved* flat or coil metal straps with pre-punched holes for 10d common or 16d common nails or #9 screws. No attachment is required for the retrofit stud located at an omitted lateral brace location where connectors are in place in accordance with Section 1707.4.1. Straps shall be fastened using the size and number of fasteners in accordance with Table 1704.1. For use of L-bent straps, attachment shall comply with the method of Section 1708.1.1 and for use of U-bent straps with the method of Section 1708.1.2. Either method is allowable at either end of a retrofit stud.

1708.1.1 L-bent strap method. For Configurations A, B, and C, retrofit studs shall be attached to lateral braces in accordance with Figure 1708.1.1 and Figure 1707.1(1) or 1707.1(2). For Configuation D, retrofit studs shall be attached to lateral braces in accordance with Figure 1708.1.2 and Figure 1707.1(1) or Figure 1707.1(2). Attachments shall comply with the following conditions except where attachments of retrofit studs at omitted lateral braces are in conformance with Section 1707.4.1.

1. A strap of the gage specified in Table 1704.1 shall be installed to the retrofit stud and lateral brace such that one end of the strap is applied vertically to the retrofit stud on its vertical narrow face nearest the exterior of the gable end wall, bent 90 degrees, and applied horizontally to the wide horizontal face of the lateral brace.

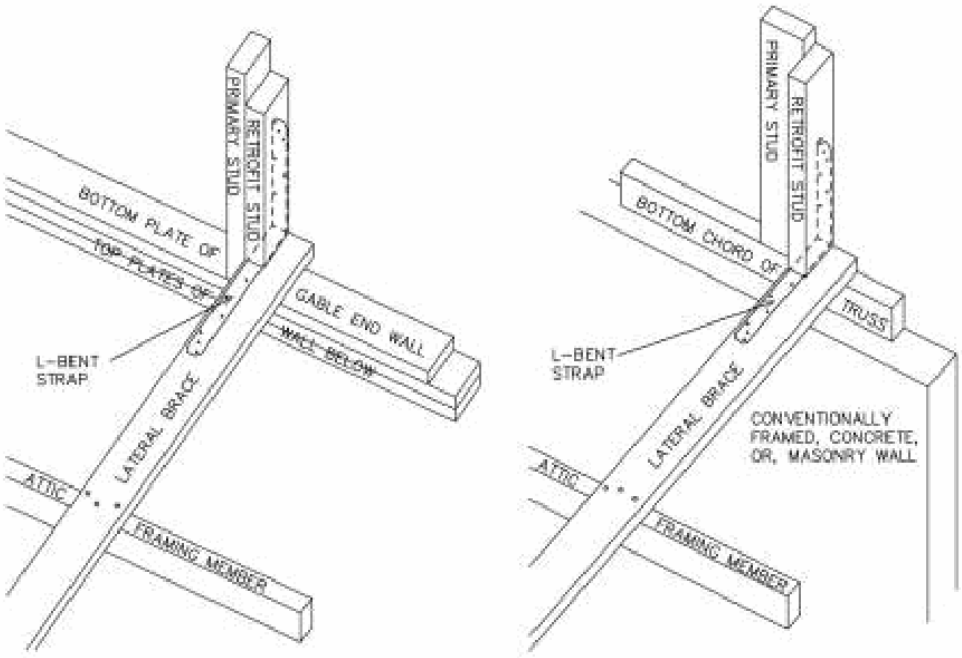
2. Straps shall be long enough and bent appropriately so that the number of fasteners required by Table 1704.1 can be installed while maintaining a minimum distance of 2-3/4 inches from fasteners to the end of retrofit studs and long enough to clear the retrofit stud end butting the lateral brace.

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3. Straps shall be permitted to be twisted or bent where they transition between the tops of retrofit studs and lateral braces to follow roof pitch. Straps shall be bent only once at a given location though it is permissible that they be bent or twisted at multiple locations along their length. The right angle bend of straps over the ends of retrofit studs shall be crisp.

4. Compression blocks shall be placed on the lateral braces and butted directly against the primary stud or the retrofit stud. Figure 1706.2.1(1) (trusses) and Figure 1706.2.1(2) (conventionally framed) show the placement of a compression block against the existing stud. The minimum contact area between compression blocks and primary or retrofit studs shall be an area equivalent to 1-1/2 inches by 1-1/2 inches (2.25 square inches). Angled contact is permissible. Compression blocks shall be allowed to be placed over straps or beside straps.

5. Compression blocks shall be fastened to lateral braces using the number of 3-inch fasteners required by Table 1704.1. Fasteners shall be placed such they are a minimum 2-3/4 inches from the ends of compression blocks, a minimum 2-3/4 inches from each other along the length of compression blocks, and a minimum ½ inch from edges of both compression blocks and lateral braces. Fasteners securing compression blocks are allowed to penetrate straps.



Conventionally framed gable end wall — Truss framed gabled end wall

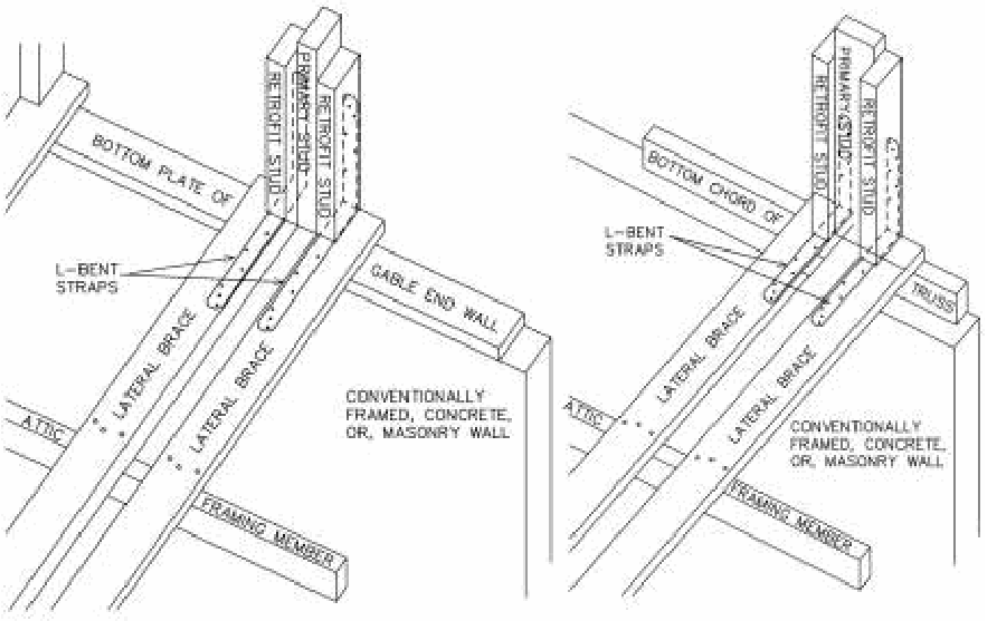
Compression blocks are not shown for clarity. Views are from within the attic.

FIGURE 1708.1.1(1)
L-BENT STRAP METHOD FOR CONFIGURATIONS A, B, AND C

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S5889 Text Modification

Page: 22



Conventionally framed gable end wall Truss framed gabled end wall

Compression blocks are not shown for clarity. Views are from within the attic.

FIGURE 1708.1.1(2)
L-BENT STRAP METHOD FOR CONFIGURATION D

1708.1.2 U-bent strap method. For Configurations A, B, and C, retrofit studs shall be attached to lateral braces in accordance with Figure 1708.1.2 and Figure 1707.1(3) or 1707.1(4). For Configuration D, retrofit studs shall be attached to lateral braces in accordance with Figure 1708.1.3 and Figure 1707.1(3) or Figure 1707.1(4). Attachments shall comply with the following conditions except where attachments of retrofit studs at omitted lateral braces are in conformance with Section 1707.4.1.

1. A strap of the gage specified in Table 1704.1 shall be wrapped around the back edge of the retrofit or primary stud and extended onto the two narrow edges of the lateral brace.

2. Lateral braces shall be placed such that one narrow face of the lateral brace is aligned with one wide face of the primary or retrofit stud and the strap shall be bent such that it is in contact with the narrow edge closest to the gable end wall of the primary or retrofit stud being wrapped.

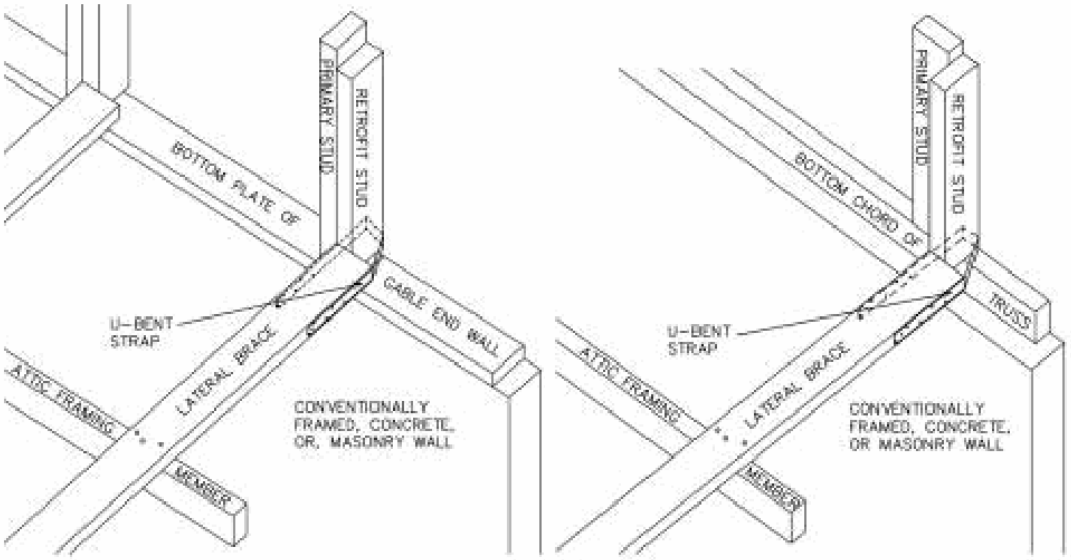
3. At the back of primary or retrofit studs, the two bends of straps shall be crisp.

4. Lateral braces shall butt snugly against the primary or retrofit stud with a maximum gap of ¼ inch.

5. Straps shall be attached to lateral braces using the number of 1-1/2 inch long fasteners specified in Table 1704.1. Fasteners for straps shall be placed minimum 2-3/4 inches from ends of lateral braces.

6. Straps shall be permitted to be twisted or bent where they transition between the tops of retrofit studs and lateral braces that follow roof pitch. Straps shall be bent only once at a given location though it is permissible that they be bent or twisted at multiple locations along their length.

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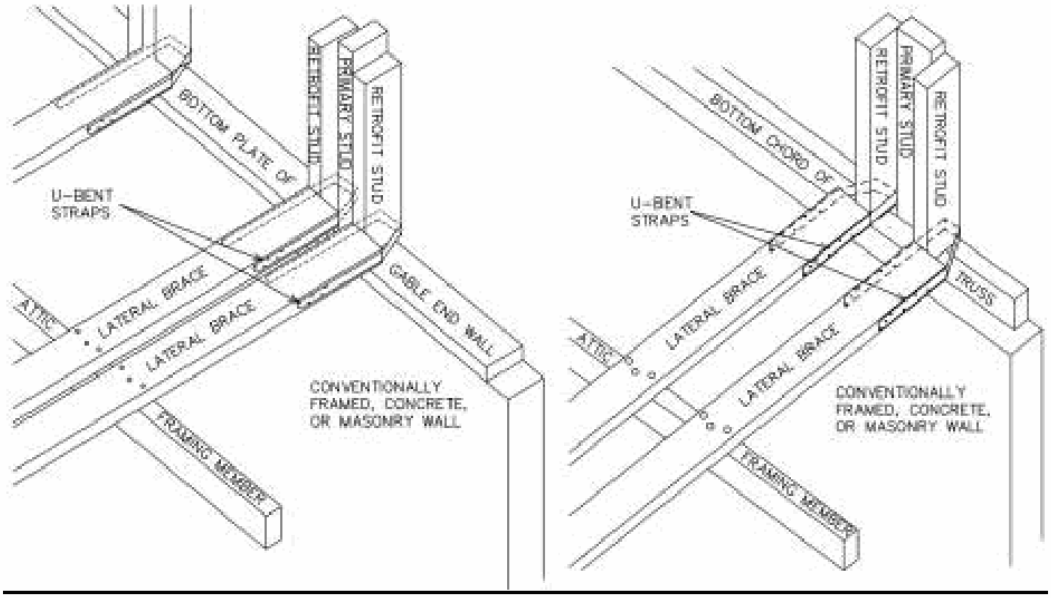


Conventionally framed gable end wall Truss framed gable end wall

Views are from within the attic.

FIGURE 1708.1.2(1)

U-BENT STRAP METHOD FOR CONFIGURATIONS A, B, AND C



Conventionally framed gable end wall Truss framed gable end wall

FIGURE 1708.1.2(2)

U-BENT STRAP METHOD FOR CONFIGURATION D

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SECTION 1709
CONNECTIONS TO WALL BELOW

1709.1 Requirements. Along gable ends where primary studs are longer than 3 feet, gable end walls shall be connected to the wall below using the methods prescribed in Section 1709.1.

1709.1.1 Truss gable end wall. Truss gable end walls shall be attached to the wall below using gusset angle brackets fastened to the bottom chord of roof trusses and to the wall below and spaced in accordance with Table 1704.1. Fasteners shall be placed a minimum of 5/8 inch from edges of lumber. Fasteners shall be permitted to penetrate truss plates. Four fasteners shall be effectively installed through each leg of gusset angles.

Exception: Where existing conditions prevent effective installation of all four fasteners into each leg of a gusset angle bracket, a supplementary gusset angle bracket shall be installed a minimum of 2-3/4 inches from and a maximum of 8 inches from the one without the four fasteners in each leg. The number of effectively installed fasteners securing the corresponding leg of the supplementary gusset angle bracket shall at least equal the number not effectively installed on the first gusset angle bracket.

1709.1.1.1 Wood Frame Wall Below. Where the wall below a gable end is a wood frame wall, a gusset angle bracket specified by the manufacturer for lumber-to-lumber applications shall be installed using fasteners of the same type supplied / specified by the manufacturer. Fasteners installed in top plates shall extend through the full depth of the lowest top plate.

1709.1.1.2 Concrete or Masonry Wall Below. Where the wall below a gable end wall is a concrete or masonry wall, connections shall be by one of the following methods.

2.1 Where the wall below does not have a sill plate on top of the bond beam, a gusset angle bracket specified by the manufacturer for lumber-to-concrete or lumber-to-masonry applications shall be installed directly to the concrete or masonry of the wall below and to the bottom chord of the truss.

2.2 Where there is a sill plate of any thickness on top of the bond beam a gusset angle bracket specified by the manufacturer for lumber-to-concrete or lumber-to-masonry applications shall be installed on the sill plate with fasteners passing vertically through the gusset angle bracket and sill plate and connecting directly into the concrete or masonry wall below. Fasteners of the same diameter and style supplied / specified by the gusset manufacturer shall be installed that have sufficient length to penetrate the sill plate and embed into the concrete or masonry to the same depth provided by the fasteners supplied / specified by the gusset angle bracket manufacturer for installation directly into concrete.

2.3 Where there is a sill plate on top of the bond beam that is a minimum 1-1/2 inches thick, a gusset angle bracket specified by the manufacturer for lumber-to-lumber applications shall be fastened to the sill plate. Gusset angle brackets shall be fastened to the sill plate using 4 each 1-1/2 inch long fasteners of the same type supplied / specified by the gusset angle manufacturer for wood connections. Regardless of how well the sill plate may be attached to the wall, it shall be anchored to the wall below on each side of the gusset angle bracket using concrete screws of the same type and size and number as those as those supplied / specified by the gusset manufacturer for concrete or masonry connections. They shall be embedded into the concrete or masonry to the same depth intended for the fasteners supplied / specified by the manufacturer of gusset angles installed in concrete. Washers of minimum 3/8 inch diameter shall be placed under heads of those fasteners. Fasteners shall be placed a minimum of 2-3/4 inches and a maximum of 8 inches from the required gusset angle bracket.

1709.1.2 Platform framed gable end wall. Conventionally framed gable end walls shall be attached to the wall below in accordance with one of the following methods.

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1709.1.2.1 Stud connections. The bottom end of each primary stud of gable end walls shall be connected to bottom members using one of the following methods.

1. Where a sill plate for the gable end wall exists, the bottom end of each primary stud shall be connected to the sill plate using a stud-to-plate metal connector with minimum uplift capacity of 175 pounds.

2. Where a wood frame gable end wall has a ceiling joist as the lowest outer member of the gable end wall, the primary studs shall be connected to the joist using a stud-to-plate metal connector with minimum uplift capacity of 175 pounds positioned on the wide face of the joist near the top of the joist so that it extends up the stud where the stud is full width.

1709.1.2.2 Wall connections. The gable end walls shall be connected to the wall below using one of the following methods.

1. Where there is a wood frame wall below a gable end wall and where the gable end wall above has a sill or bottom plate atop the plates of the wall below, the sill of the gable end wall shall be connected to the top plates of the wall below using minimum 5/8 inch diameter lag bolt of sufficient length to penetrate through the lower top plate of the wall below. Lag bolts shall be placed minimum 1-5/8 inches from edges of lumber. The lag bolts shall be installed at the spacing indicated in Table 1704.1.

2. Where a wood frame gable end wall has a ceiling joist as the lowest outer member of the gable end wall, that joist shall be connected to the wall below using the method Section 1709.1.1(1) or 1709.1.1 except read 'ceiling joist' for 'bottom chord of roof truss'.

3. Where the wall below a gable end wall is a concrete or masonry wall, the sill or bottom plate of the gable end wall shall be connected to the wall below using ¼ inch diameter concrete or masonry screws of the same type used for gusset angles and of sufficient length to provide a minimum embedment of 1-1/2" into the concrete of the wall or a minimum 2-3/4 inches into the masonry of the wall. A washer sized for the diameter of the lag bolt or wood screw shall be placed under the head of each lag bolt. The fasteners shall be installed at the spacing indicated in Table 1704.1.

1709.1.3 Balloon framed gable end wall. The retrofits presented in this chapter are specifically intended for platform framed gable end walls.

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Date Submitted	8/1/2012	**Section**	202	**Proponent**	Jim Heise
Chapter	2	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

brings forward the definition of sunroom

Rationale

The base code definition does not address the most commonly built sunroom in Florida. The addition to the definition has been in the FBC for more than 1 edition and has been proven to be beneficial to the gerneral public.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

no adverse impact as this definition has been in the FBC for more than one version

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

no adverse impact as this definition has been in the FBC for more than one version

Impact to industry relative to the cost of compliance with code

no adverse impact as this definition has been in the FBC for more than one version

Requirements

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

adding to this definition affects the welfare of the general public by defining the most common type of sunroom used in Florida

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

adding to this definition defines the most common type of sunroom used in Florida

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

Proponent BOAF CDC **Submitted** 9/23/2012 **Attachments** No

Comment:

The provision this is based upon has sunset with the other Florida Changes to the 2010 FBC.

The amendment does not demonstrate by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variations addressed by the foundation code. Per FS 553.73 (7) (g)

The proposed amendment was does not appear to have been submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

Nor is there any indication in the monograph titled “Florida Supplement to the 2012 IEBC” developed by staff to indicate what would be added to the 2013 FBC,E

S5961-G1

Text of modification ...

Sunroom

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

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

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S4962

Date Submitted	7/6/2012	**Section**	[B]402.4	**Proponent**	Michael Goolsby
Chapter	4	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

While this entire Chapter is applicable for the HVHZ it makes reference and provides direction to sections which are not applicable for the HVHZ. The purpose of this proposed modification is to provide guidance to the applicable and equivalent HVHZ sections. In this way, compliance with the intent of these provisions can be maintained in all jurisdictions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Removes confusion by providing accurate direction regarding application of applicable code sections.

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

Removes confusion by providing accurate direction regarding application of applicable code sections.

Impact to industry relative to the cost of compliance with code

Removes confusion by providing accurate direction regarding application of applicable code sections.

Requirements

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

It does so by ensuring direction to applicable sections of the code are provided.

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

It does so by ensuring direction to applicable sections of the code are provided.

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

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Does not degrade the effectiveness of the code

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

B] 402.4 Existing structural elements carrying lateral load. Where the addition is structurally independent of theexisting structure, existing lateral load-carrying structural elementsshall be permitted to remain unaltered. Where the additionis not structurally independent of the existing structure,the existing structure and its addition acting together as a single structure shall be shown to meet the requirements of Sections1609 and 1613 (the HVHZ shall comply with Section 1620) of the International Building Code.

Exception: Any existing lateral load-carrying structural element whose demand-capacity ratio with the addition considered is no more than 10 percent greater than its demand-capacity ratio with the addition ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces in accordance with Sections 1609 and 1613 of the International Building Code. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of additions and alterations since original construction.

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Date Submitted	7/6/2012	**Section**	[B]403.4	**Proponent**	Michael Goolsby
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

General Comments No

Alternate Language No

Related Modifications

Summary of Modification

Section formatting

Rationale

While this entire Chapter is applicable for the HVHZ it makes reference and provides direction to sections which are not applicable for the HVHZ. The purpose of this proposed modification is to provide guidance to the applicable and equivalent HVHZ sections. In this way, compliance with the intent of these provisions can be maintained in all jurisdictions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Removes confusion by providing accurate direction regarding application of applicable code sections.

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

Removes confusion by providing accurate direction regarding application of applicable code sections.

Impact to industry relative to the cost of compliance with code

Removes confusion by providing accurate direction regarding application of applicable code sections.

Requirements

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

Removes confusion by providing accurate direction regarding application of applicable code sections.

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

Removes confusion by providing accurate direction regarding application of applicable code sections.

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

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Does not degrade the effectiveness of the code

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

[B] 403.4 Existing structural elements carrying lateral load. Except as permitted by Section 403.5, with the alterationincreases design lateral loads in accordance with Section1609 or 1613 (the HVHZ shall comply with Section 1620) of the International Building Code, or where the alteration results in a structural irregularity as defined in ASCE 7, or where the alteration decreases the capacity ofany existing lateral load-carrying structural element, thestructure of the altered building or structure shall be shown tomeet the requirements of Sections 1609 and 1613 (the HVHZ shall comply with Section 1620) of theInternational Building Code.

Exception: Any existing lateral load-carrying structural element whose demand-capacity ratio with the alteration considered is no more than 10 percent greater than its demand-capacity ratio with the alteration ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces in accordance with Sections 1609 and 1613 (the HVHZ shall comply with Section 1620) of the International Building Code. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of additions and alterations since original construction.

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S4965

Date Submitted	7/6/2012	**Section**	[B]404.2.1	**Proponent**	Michael Goolsby
Chapter	4	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

While this entire Chapter is applicable for the HVHZ it makes reference and provides direction to sections which are not applicable for the HVHZ. The purpose of this proposed modification is to provide guidance to the applicable and equivalent HVHZ sections. In this way, compliance with the intent of these provisions can be maintained in all jurisdictions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Removes confusion by providing accurate direction regarding application of applicable code sections.

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

Removes confusion by providing accurate direction regarding application of applicable code sections.

Impact to industry relative to the cost of compliance with code

Removes confusion by providing accurate direction regarding application of applicable code sections.

Requirements

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

It does so by ensuring direction to applicable sections of the code are provided.

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

It does so by ensuring direction to applicable sections of the code are provided.

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

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Does not degrade the effectiveness of the code

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

[B] 404.2.1 Evaluation. The building shall be evaluated by a registered design professional, and the evaluation findings shall be submitted to the building official. The evaluation shall establish whether the damaged building, if repaired to its predamage state, would comply with the provisions of the International Building Code for wind and earthquake loads. Wind loads for this evaluation shall be those prescribed in Section 1609 (the HVHZ shall comply with Section 1620) of the International Building Code. Earthquake loads for this evaluation, if required, shall be permitted to be 75 percent of those prescribed in Section 1613 of the International Building Code.

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Date Submitted	7/31/2012	**Section**	510	**Proponent**	T Stafford
Chapter	5	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Charging language is added to provided direction to Chapter 17 for retrofits.

Rationale

This proposal is a correlation with Mod 5888. It adds new charging language to direct the user to proposed new Chapter 17 for retrofits.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This prescriptive modification greatly facilitates plans review and inspection by providing a standardized methodology.

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

There is no cost unless a building or property owner voluntarily opts for a gable end retrofit.

Impact to industry relative to the cost of compliance with code

There is no cost to industry for compliance.

Requirements

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

Gable ends are a known weakness in the vast majority of buildings not constructed and inspected to modern high wind standards. Strengthening gable ends improves the safety of occupants of buildings at risk and occupants of nearby buildings and it improves the general welfare of the public.

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

The modification provides a prescriptive method for strengthening gable ends that reduces the cost of retrofitting by not requiring a reinvention of the method and facilitating building inspections by the codification of a standard retrofit measure.

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

There is no discrimination of materials or products.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5890-G1

Proponent BOAF CDC **Submitted** 9/23/2012 **Attachments** No

Comment:

Retrofitting, this is the Voluntary Gable End Bracing.

The numbering of the code change is inaccurate. (510)

The amendment does not demonstrate by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variations addressed by the foundation code. Per FS 553.73 (7) (g)

There is no supporting data

SECTION 410

RETROFITTING

410.1 Scope. Retrofitting of buildings, as defined in Chapter 2, includes work of a voluntary nature for the purposes of improving the ability of the building or building elements or building components to better serve the purpose for which they were originally intended or the purpose that current building codes intend. Retrofit work shall not include repair work as defined in Chapter 2 and described in Section 402.1.

410.2 Application. Retrofitting of existing buildings shall comply with the provisions of Chapter 17 of this code.

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SECTION 1701
GENERAL

1701.1 Purpose. This chapter provides prescriptive methods for partial structural retrofit of an existing building to increase the resistance of gable end walls to out-of-plane wind loads. It is intended for voluntary use and for reference by mitigation programs. The provisions of this chapter do not necessarily satisfy requirements for new construction. Unless specifically cited, the provisions of this chapter do not necessarily satisfy requirements for structural improvements triggered by addition, alteration, repair, change of occupancy, building relocation or other circumstances.

1701.2 Eligible condition. The provisions of this chapter are applicable to buildings that meet all of the following eligibility requirements:

1. The building is Occupancy R3 (1-2 family dwellings)
2. The building includes one or more wood-framed gable end walls constructed using platform framing techniques.
3. The building shall have a *mean roof height* of 35' or less.
4. The building includes attic-framing members in the area where retrofit members will be installed shall be made of conventional lumber assembled with nails or the like or with truss plates.
5. The wall below a gable end wall being retrofitted shall be made of conventional lumber assembled with nails or the like or with truss plates or the wall shall be made of concrete or masonry.
6. Each gable end wall being retrofitted has or will be provided with studs or vertical webs spaced 24 inches on center maximum.
7. Each gable end wall being retrofitted has a maximum height of 16 ft.
8. The building is or would be assigned to risk category I or II per *Florida Building Code* Table 1704.5.
9. The ceiling diaphragm of the retrofitted building in the area of the retrofit shall be comprised of minimum ½ inch gypsum board, minimum nominal 3/8 inch wood structural panels, or plaster.
10. The roof diaphragm of the building in the area of the retrofit shall be of minimum nominal 4'x8' paneling made of plywood, oriented strand board, or similar, or boards butted to each other along their long edges and ends.

1701.3 Compliance. All modifications required for conformance with this chapter shall be designed and constructed in accordance with the *Florida Building Code* or *Florida Residential Code* provisions for new construction except as specifically modified by this chapter.

SECTION 1702
DEFINITIONS

ADDED STUD. Studs installed in a gable end wall to provide the required minimum spacing between existing wall studs prior to adding any retrofit studs needed to brace or stiffen the gable end wall.

ATTIC-FRAMING MEMBERS. Structural members such as ceiling joists, rafters, and roof trusses that support ceiling diaphragms or roof decking.

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BALLOON FRAMING. A type of wall framing where vertical wall framing members of the gable end wall and the rectangular wall below are continuous from the top of the gable end wall to the bottom of the rectangular wall below.

COMPRESSION BLOCK. A piece of lumber used to restrain an existing or retrofit stud against movement or deflection toward the interior of the building, attached to a lateral brace and bearing directly against the primary or retrofit stud.

EXISTING STUD. A stud in a gable end wall that already exists before the installation of added studs or conducting gable end bracing and stiffening using lateral braces or retrofit studs.

GABLE END WALL. The triangular wall segment at a gable end whose framing members may be conventionally framed, balloon framed, or framed with a truss.

GABLE END TRUSS. A roof truss at an exterior wall with lumber members oriented with their wide faces parallel to the plane of the wall.

GUSSET ANGLE BRACKET. Metal connectors intended by the manufacturer to be connect materials at right angles to each other supplied by the manufacturer with fasteners.

LATERAL BRACE. A lumber member typically installed horizontally on the top of attic floor framing members or on the bottom of pitched roof framing members used to transfer both compression and tension loads applied by a gable wall existing, added or retrofit stud into either the ceiling or roof diaphragm.

NAIL PLATE. A manufactured metal plate made of galvanized steel with factory punched holes for fasteners. A nail plate may have the geometry of a strap.

PLATFORM FRAMING. A type of wall framing where vertical framing members of the gable end wall terminate at or above the top plate on the rectangular wall below the gable end wall.

PRIMARY STUD. An existing or added stud as defined above. A vertical member installed against the gable end wall sheathing and connected to the top and bottom chords of the gable end framing that provides the required minimum spacing of structural members supporting the wall sheathing.

RETROFIT. The process of strengthening or improving buildings or structures, or individual components of buildings or structures for the purpose of making existing conditions better serve the purpose for which they were originally intended or the purpose that current building codes intend.

RETROFIT STUD. A vertical lumber member used to supplement the strength or stiffness of an existing or added (primary) stud.

STUD-TO-PLATE CONNECTOR. A manufactured metal connector designed to connect studs to lumber plates.

SECTION 41703
MATERIALS

1703.1 Existing materials. All existing lumber framing members to which retrofit components will be attached shall be in sound condition suitable for their purpose. Ceiling and roof diaphragms in the area of lateral braces shall be in sound condition suitable for their purpose.

1703.2 New and replacement materials. All new and replacement materials shall comply with the requirements of the *Florida Building Code* or the *Florida Residential Code* as applicable.

1703.3 Material specifications for retrofits. Materials for retrofitting gable end walls shall comply with Table 1703.3.

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TABLE 1703.3
MATERIAL SPECIFICATIONS FOR RETROFITS

Component	Minimum Size or Thickness	Minimum Material Grade or Type	Minimum Capacity
All lumber	2 inch nominal thickness Minimum depth will vary according to application	#2 Spruce-Pine-Fir (S) or better	Not applicable
Gusset angle bracket	14 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood, wood-to-CMU, or wood-to-concrete.	350 pounds uplift and lateral load
Stud-to-plate connector	14 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood	500 pounds uplift
Metal connectors	20 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood, wood-to-CMU, or wood-to-concrete.	Not applicable
Nail plates and straps	20 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood.	Not applicable

1703.4 Nominal sizes. For the purposes of this code, where dimensions of lumber are specified, they shall be deemed to be nominal dimensions.

1703.5 Fasteners. Fasteners shall meet the requirements of Table 1703.6, Sections ~~s~~ 1703.6.1, and Section 1703.6.2, and shall be permitted to be screws or nails meeting the minimum length requirement shown in the figures and specified in the tables of this chapter. Fasteners used to secure connectors shall be those approved by the manufacturer.

1703.5.1 Screws. Unless otherwise indicated in this Appendix, screw sizes and lengths shall be in accordance with Table 1703.5. Permissible screws include deck screws and wood screws. Fine threaded screws, finish screws, or drywall screws shall not be permitted.

1703.5.2 Nails. Unless otherwise indicated in this Chapter, nail sizes and lengths shall be in accordance with Table 1703.5.

TABLE 1703.5
NAIL AND SCREW REQUIREMENTS

Minimum Fastener Length	Fastener Type	Shank Diameter (Neglecting galvanizing) Minimum and maximum	Minimum Length of thread	Minimum Head Diameter
1-1/2 inches	#9 screws	0.177 inches	1-1/4"	0.28 inches
	8d common nails	0.131 inches	Not applicable	0.28 inches
3 inches	#9 screws	0.177 inches	1-1/2"	0.28 inches
	10d common nails	0.148 inches	Not applicable	0.28 inches

For SI: 1 inch = 25.4 mm

1703.6. Metal connectors and nail plates. Metal plate connectors, nail plates, stud-to-plate connectors, straps and anchors shall be manufactured from galvanized steel and be products *approved* for connecting wood-to-wood or

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wood-to-concrete as appropriate for the application. Nail plates shall have holes sized for a minimum of 8d or 10d nails or #9 screws.

SECTION 1704
GENERAL REQUIREMENTS AND MEANS OF RETROFIT

1704.1 General requirements. The strengthening scheme provided by this chapter requires the installation of lateral braces, retrofit studs, and other load path components to supplement existing framing. Figure 1704.1 shows the general schematic arrangement of the various elements. Lateral braces and retrofit studs shall be installed at each primary stud as specified in Section 1706 and Section 1707. At each primary stud subject to strengthening, the retrofit configuration shall be determined in accordance with Table 1704.1. Retrofitting shall be in accordance with Section 1705 for installation of added studs where existing ones are too far apart, Section 1706 for the establishment of locations for retrofits and the installation of retrofit studs that strengthen primary studs, Section 1707 for the installation of lateral braces that connect ceiling and roof diaphragms via attic-framing members, Section 1708 for the two methods for the installation of straps that connect the ends of retrofit studs to lateral braces, and Section 1709 for connection of a gable end wall to the wall below.

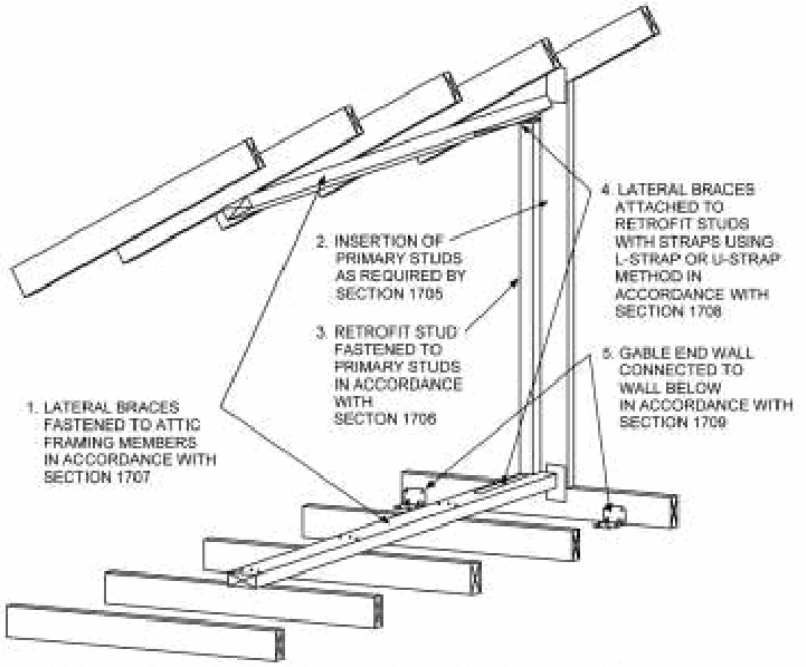


FIGURE 1704.1
GENERAL MEANS OF GABLE END RETROFIT

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TABLE 1704.1
RETROFIT CONFIGURATION AS A FUNCTION OF EXPOSURE CATEGORY, DESIGN WIND SPEED, AND STUD HEIGHT

RETROFIT ELEMENTS				SIZE AND NUMBER OF RETROFIT ELEMENTS Stud length limitations based on Exposure, Basic Wind Speed, and Configuration			
Exposure Category	Max 3-sec gust Basic Wind Speed (Interpolation is not permitted)	Connections of gable end wall to wall below. On center spacing (Section 1708)		Configurations A, B, C, or D			
		Gusset angle bracket	Fasteners to secure sill plate to wall	**A**	**B**	**C**	**D**
D	< or =130 mph	39"	14"	6'-11"	10'-11"	14'-3"	16'-0"
D	>130 - 140 mph	34"	12"	6'-7"	10'-5"	13'-7"	16'-0"
D	>140 - 150 mph	29"	10"	6'-2"	9'-9"	12'-10"	16'-0"
D	>150 - 160 mph	26"	9"	5'-11"	9'-1"	12'-0"	15'-4"
D	>160 - 170 mph	23"	8"	5'-6"	8'-7"	11'-4"	14'-9"
D	>170 - 180 mph	20"	7"	5'-2"	8'-1"	10'-8"	14'-2"
C	< or =130 mph	46"	16"	7'-4"	11'-6"	15'-1"	16'-0"
C	>130 - 140 mph	39"	14"	7'-0"	10'-11"	14'-5"	16'-0"
C	>140 - 150 mph	34"	12"	6'-8"	10'-5	13'-8"	16'-0"
C	>150 - 160 mph	30"	11"	6'-4"	9'-10"	13'-0"	16'-0"
C	>160 - 170 mph	27"	9"	5'-11"	9'-3"	12'-3"	15'-6"
C	>170 - 180 mph	24"	8"	5'-7"	8'-9"	11'-7"	15'-0"
B	< or =130 mph	63"	22"	8'-2"	12'-10"	16'-0"	(a)
B	>130 - 140 mph	54"	19"	7'-9"	12'-2"	15'-0"	(a)
B	>140 - 150 mph	47"	17"	7'-5"	11'-8"	15'-3"	16'-0"
B	>150 - 160 mph	42"	15"	7'-1"	11'-2"	14'-7"	16'-0"
B	>160 - 170 mph	37"	13"	6'-10"	10'-8"	14'-0"	16'-0"
B	>170 - 180 mph	33"	12"	6'-7"	10'-4"	13'-6"	16'-0"
Retrofit studs Minimum size and number (Section 1706)				2x4	2x6	2x8	2 each 2x8
Lateral brace above and below (top and bottom) Minimum size and number (Section 1707)				2x4	2x4	2x4	2 each 2x8
Retrofit Elements for **L-bent strap** applications (Section 1708.1)							
Fasteners at each end for strap connecting Retrofit studs to Lateral braces using 1-1/2 inch long fasteners complying with Table 1703.6 Minimum number				3	5	6	5 at each end of each strap
Fasteners to connected Compression blocks to Lateral braces using 3-inch long fasteners complying with Table 1703.6 Minimum number				4	6	7	5
Retrofit Elements for **U-bent strap** applications (Section 1708.2)							
Fasteners to connect straps to each edge of Lateral braces using 1-1/2 inch long fasteners complying with Table 1703.6 Minimum number				3	4	4	4 at each end of each strap

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

(a) Configuration C is allowable.

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SECTION 1705
ADDED STUDS

1705.1 Requirements for added studs. Along a platform framed gable end wall where an existing stud is longer than 3 feet and the distance (centerline to centerline) between that stud and an adjacent stud that is also longer than 3 feet is greater than 22-1/2 inches, an added stud shall be installed. This requirement also applies to the top truss of a piggyback truss assembly. The length of the stud shall be the maximum length of the stud itself exclusive of the depth of the top chord and bottom chord members. If an existing stud is interrupted by other members, such as by a diagonal in a gable end truss, it shall include pieces above and below the interrupting member to provide continuity from the top of the bottom chord to the bottom of the top chord of the gable end framing, or wood structural members shall be added to provide this continuity. If a lateral brace is being omitted as allowed in Section 1707.4.1, then the existing or added stud shall not be required to be continuous from an interruption to the location of the omitted lateral brace. Added studs shall have at minimum the same narrow and wide face dimensions as the existing studs.

1705.2 Placement of added studs. Added studs shall be installed with the same orientation as existing studs. Added studs of piggyback trusses shall align with required primary studs in the truss below.

1705.3 Attachment of added studs. In the case of conventional framing, each end of each required added stud shall be attached to the top and bottom plates. In the case of truss construction, each end of each required added stud shall be attached to the top and bottom chord of the truss. Attachments shall be made using a stud-to-plate metal connector with minimum uplift capacity of 175 pounds fastened with 1-1/2 inch long fasteners complying with Table 1703.5.

1705.4 Interrupted or short existing studs. Existing studs longer than 3 feet that extend to only one end of attic-framing members shall be retrofitted using the methods of Section 1706.6. Existing studs that are interrupted shall be retrofitted using the methods of Section 1706.7.

SECTION 1706
RETROFIT STUDS

1706.1 Requirements for retrofit studs. Except as allowed by Section 1706.5, a retrofit stud shall be installed at each primary stud longer than 3 feet where lateral braces can be installed using the methods of Section 1707. The size of retrofit studs shall be as required by Table 1704.1 for the appropriate retrofit configuration. Where straps are installed using the L-bent strap method of Section 1708.1.1, retrofit studs shall extend from the top of the lower lateral brace up to the bottom of the upper lateral brace except that a maximum gap of 1/8 inch is allowed at the bottom and ½ inch at the top. Where straps are installed using the U-bent method of Section 1708.1.2, retrofit studs shall extend beyond the ends of lateral braces such that lateral braces can fully butt against the retrofit studs.

Exception: A retrofit stud need not be added where the distance between it and an adjacent retrofit, primary stud would be less than 14-1/2 inches.

1706.2 Piggyback trusses. Primary studs of piggyback truss assemblies shall have retrofit studs sized and placed such that a single continuous retrofit stud is installed and fastened to the primary stud of both the lower and upper truss. Added studs shall be placed and fastened in accordance with Section 1705. The bottom chord of the upper truss shall be connected to the retrofit stud using an *approved* connector with minimum tension capacity of 175 pounds.

1706.3 Placement of retrofit studs. Retrofit studs and nailers can be placed on either side of primary studs. Retrofit studs shall be installed in accordance with one of the following methods.

1706.3.1 Method (a): Face to edge or to face method. Retrofit studs shall be placed immediately adjacent to primary studs as indicated in Figure 1706.3(a) such that retrofit studs overlap the edge or side of the primary stud by a minimum of 1-1/4 inches. Fasteners shall be placed in accordance with Section 1706.4.1.

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1706.3.2 Method (b): Butted retrofit stud method. Retrofit studs shall be placed such that the narrow face of retrofit studs butt against primary studs as indicated in Figure 1706.3(b). Retrofit studs shall be attached to primary studs with nail plates as indicated in Figure 1706.3(b). Nail plates shall be spaced and attached in accordance with Section 1706.4.2.

1706.3.3 Method (c): Offset retrofit stud method. Retrofit studs shall be placed such that the retrofit stud is offset from the primary stud by use of nail plates such that the nail plate can be affixed as indicated in Figure 1706.3(c) and Figure 1706.4.2 provided the fastening conditions of Section 1706.4.2 are met.

1706.3.4 Method (d): Nailer with retrofit stud method. Retrofit studs and existing studs shall be connected using minimum 2x4 nailers as indicated in Figure 1706.3(d) provided the following conditions are met. Nailers may be comprised of multiple members lengthwise.

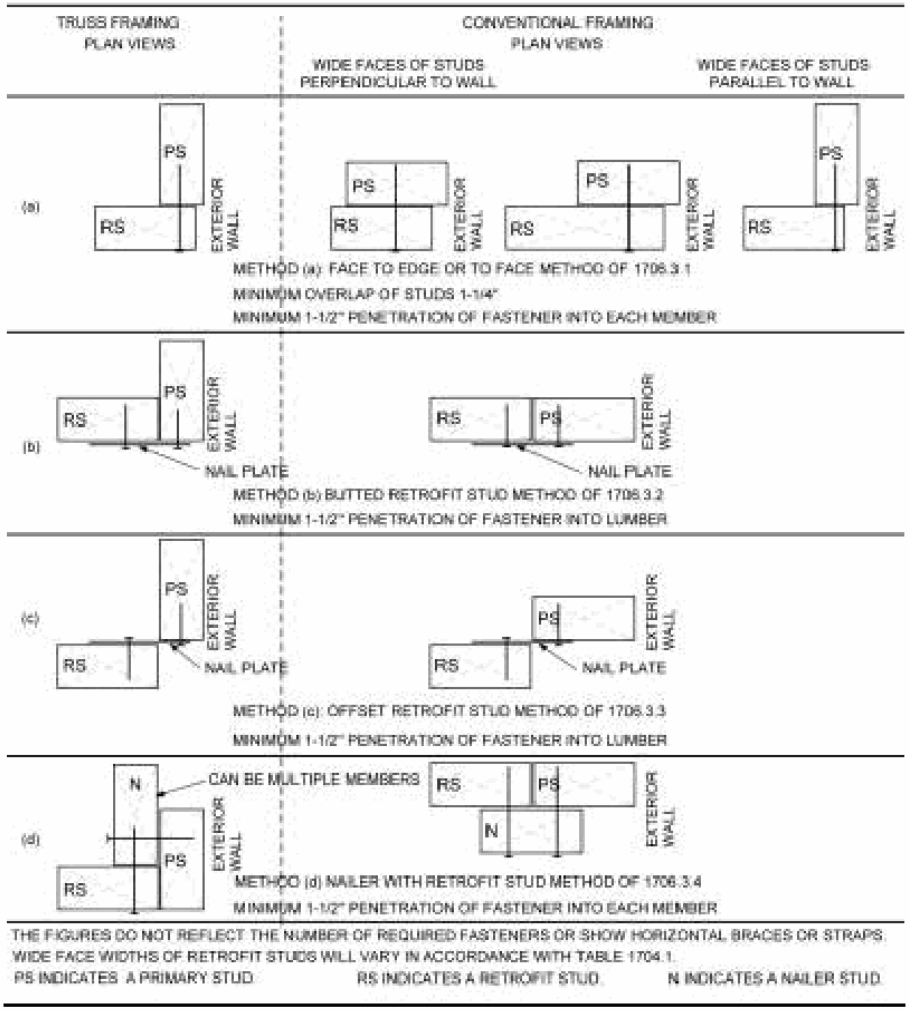
1. Both the primary stud and the retrofit stud shall be butted to nailers and both shall be fastened to the nailer with 3-inch fasteners. Fasteners connecting each stud to the nailer shall be spaced 6 inches on center.

2. Fasteners into nailers through the face of either member shall be offset vertically by a minimum of 2-3/4 inches.

3. Fasteners into nailers shall be a minimum of 2-3/4 inches but not more than 6 inches from the end of the shorter of the primary stud or retrofit stud to which they are fastened.

4. Fasteners shall be placed minimum ½ inch from the edges of studs.

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For SI: 1 inch = 25.4 mm

FIGURE 1706.3
PLACEMENT OF RETROFIT STUDS

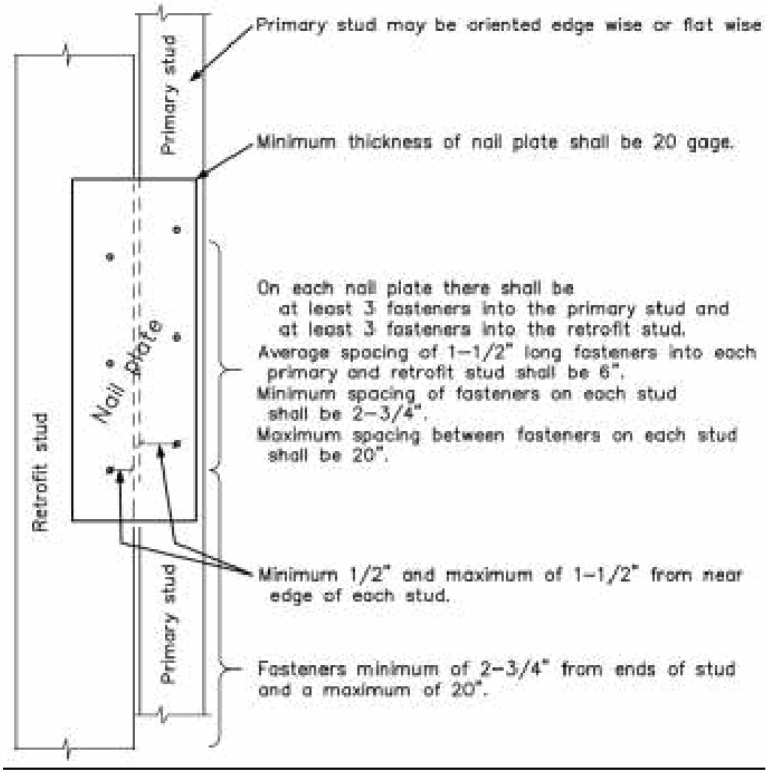
1706.4 Attachment of retrofit studs to primary studs. Retrofit studs, nail plates, and nailers shall be fastened in accordance with the following.

1706.4.1. Fastener attachments. Where retrofit studs are placed using the methods of Section 1706.3.1 or Section 1706.3.4, retrofit studs shall be attached to primary studs and nailers shall be attached to primary studs and retrofit studs using minimum 3-inch long fasteners. Fastener penetration into each member shall be a minimum 1-1/2 inch. Fasteners can be installed from either face of studs or nailers. Fasteners shall be a minimum of 2-3/4 inches on center along through the face of either member along the length of studs and from ends of studs, and a maximum of 6 inches on center, minimum ½ inch to edges of studs, and minimum 1 inch across studs. Fasteners into nailers from any direction shall be offset vertically a minimum of 2-3/4 inches. Fasteners shall be minimum 2-3/4 inches from ends of lumber.

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1706.4.2. Nail plate attachments. Where retrofit studs are placed using the methods of Section 1706.3.2 or Section 1706.3.3, nail plates shall be spaced and attached in accordance with all of the following requirements.

1. Nail plates shall be spaced such that vertical spacing between plates shall be a maximum of 20 inches.
2. There shall be at least 3 fasteners through each nail plate into both the primary and retrofit studs.
3. Fasteners used to secure nail plates to studs shall be a minimum 1-1/2 inch long and fasteners shall be a minimum of 2-3/4 inches and a maximum of 6 inches from the ends of retrofit studs.
4. Fasteners placed in nail plates shall be spaced a minimum of 2-3/4 inches along the length of lumber and 2-3/4 inch from ends of lumber.
5. Fasteners shall be placed a minimum of a ½ inch from the edges of the studs and a maximum of 1-1/2 inches from the abutting vertical edges of primary and retrofit studs.
6. Staggered fasteners used to secure nail plates shall be spaced horizontally a minimum of ½ inches.



For SI: 1 inch = 25.4 mm

FIGURE 1706.4.2
NAIL PLATE FASTENING

1706.4 Reduced width of retrofit studs. The broad face of retrofit studs may be reduced in width by methods of cutting, boring, or notching at any number of locations along their length provided that all of the following conditions are met.

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1. The wide face of retrofit studs shall be sized such that the remaining minimum width of the member at each location of reduced width shall not be less than that required by Table 1704.1.

2. The distance between segments of reduced width shall be a minimum of 8 inches and shall be allowable at the ends of retrofit studs.

3. The average spacing of fasteners connecting retrofit studs to existing studs shall be maximum 6 inches on center.

4. The minimum vertical distance between fasteners on studs shall be a minimum of 2-3/4 inches.

5. Retrofit studs reduced in width shall not be spliced within 12 inches of the location of reduced width. Splice members shall not be notched.

1706.6 Omitted retrofit stud – Ladder assembly. Where existing conditions prevent installation of a full length retrofit stud in accordance with Section 1706.1 or Section 1707.4, the retrofit stud and its associated two lateral braces shall be permitted to be wholly or partially omitted from that location by installation of a ladder assembly for Retrofit Configurations A and B as defined in Table 1704.1 provided all of the following conditions are met. This method is not allowed for Retrofit Configurations C or D.

1. No more than two ladder assemblies are permitted on a single gable end.

2. There shall be at least two retrofit studs and lateral brace assemblies on each side of the location where a retrofit stud is omitted.

3. Where both of the retrofit studs on each side an omitted retrofit stud would be required by Table 1704.1 to be 2x4, they shall both be 2x6. Where either retrofit stud on the side of an omitted stud would be required by Table 1704.1 to be 2x6, they both shall be 2x8. Where either retrofit stud on the side of an omitted stud would be required by Table 17o4.1 to be 2x8, they both shall be 2x10

4. Lateral braces adjacent to the omitted lateral brace shall be minimum 2x6 lumber extend over four roof framing members and be fastened to each of the four attic-framing member crossed using minimum four (4) 3-inch long fasteners. Fasteners shall be installed in accordance with Section 1706.4.

5. Ladder rungs shall be of minimum 2x4 lumber installed horizontally with their wide face oriented horizontally and installed to span between the retrofit studs on either side of the omitted retrofit stud. The edge of the ladder rung shall bear against the primary stud at the location of the omitted retrofit stud. Ladder rungs shall be vertically spaced a maximum of 16 inches on center.

6. Where ladder rungs cross and bear against the primary stud at the location of the omitted retrofit stud, they shall be attached to the primary stud using a stud-to-plate connector with a minimum capacity of 175 pounds in the direction perpendicular to the gable end wall. Ladder rungs shall be attached to the retrofit studs on both sides of the location where the retrofit stud is omitted using two 3-inch long fasteners driven through the retrofit stud and into the end of the ladder rung.

7. Notching of the ladder rungs shall not be permitted unless the net depth of the ladder rung is a minimum of 3-1/2 inches in the area of the notch.

1706.7 Interrupted primary studs. Where primary studs are interrupted because of existing conditions and where existing conditions permit, a retrofit stud shall be installed that bridges the interruption. It shall be attached to the primary stud both below and above the interruption, sized in accordance with Table 1704.1 for the total length, placed in accordance with Section 1706.3, and attached in accordance with Section 1706.4 along the portion of its length that is in contact with the primary stud.

1706.8 Short retrofit studs. Where existing conditions are such that a lateral brace installed in accordance with Section 1707 can only be installed at one end of a primary stud extends to a lateral brace at only a ceiling or a roof

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diaphragm such that a lateral brace can be installed in accordance with Section 1707, the method of retrofit shall comply with Section 1706.7.

1706.9 Spliced retrofit studs. Retrofit studs shall be permitted to be spliced provided all of the following conditions are met.

1. Retrofit studs shall be butted to one another at the splice joint and a minmum 4 foot length of splice member shall be centered at the butt joint.

2. Lumber splice members shall be nominal 2 inch lumber with the wide face width equal to or wider than the face width of the spliced retrofit studs.

3. Splice members shall be attached to each of the retrofit stud members on each side of the splice with minimum 7 rows of 3 fasteners for a total of 21 fasteners. Rows of fasteners shall be minimum 2-3/4 inches from the end of the splice member, minimum 2-3/4 inches from the splice joint and ends of members, and spaced evenly along the 18 inch splice overlap between these two limits.

SECTION 1707
LATERAL BRACES

1707.1 Requirements for lateral braces. At each end of a retrofit stud, a lateral brace shall be installed as indicated in Figure 1707.1(1) or Figure 1707.1(3) for trusses and Figure 1707.1(2) or Figure 1707.1(4) for conventionally framed gable end walls. Lateral braces shall be allowed to be omitted in accordance with Section 1706.6 or Section 1707.3. Alternative methods for providing lateral bracing are allowable in accordance with Sections 1707.4.1. Lateral braces shall be minimum 2x4 lumber except as required by Section 1707.4.1 or Section 1706.6.

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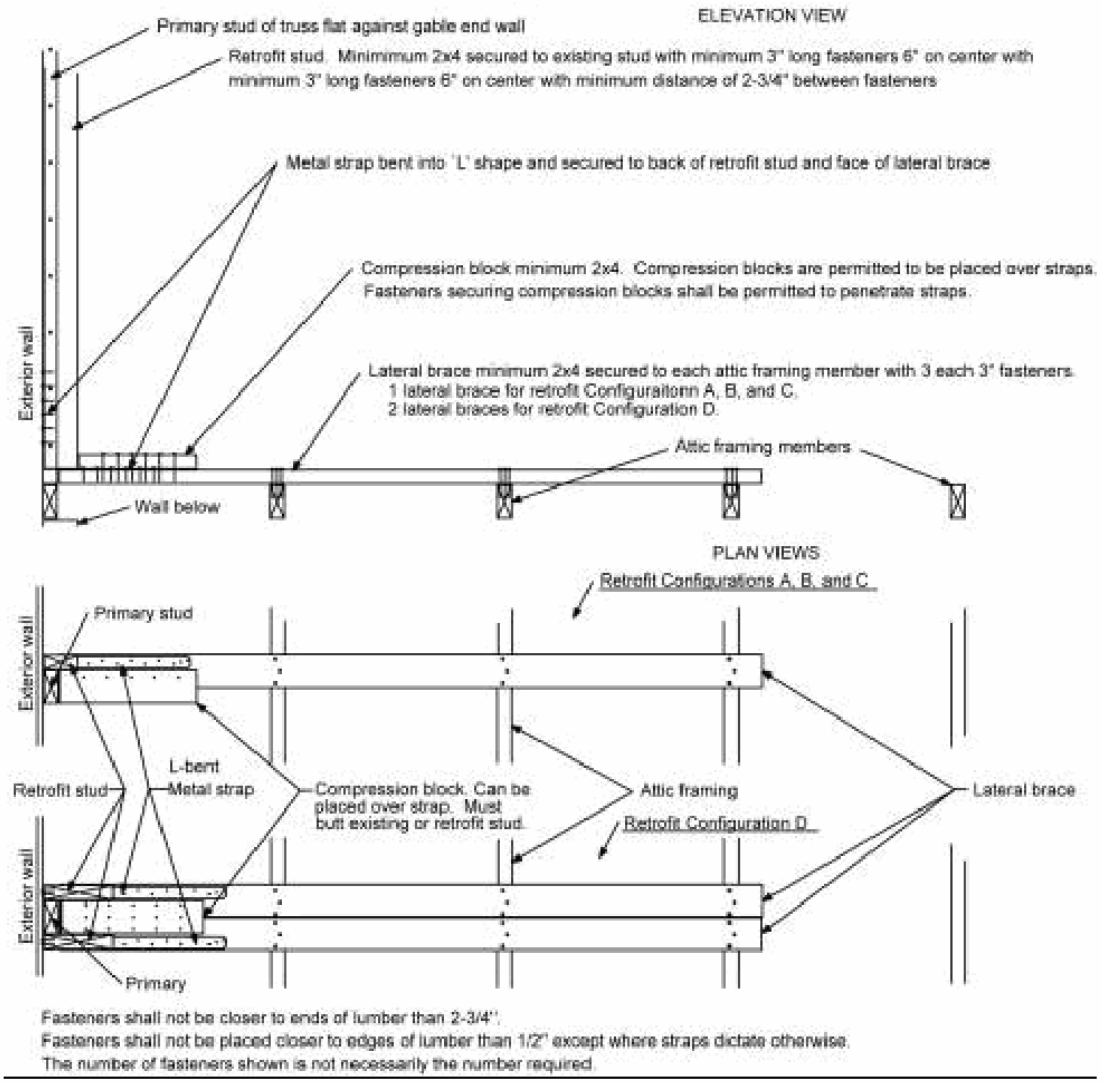


FIGURE 1707.1(1)
TRUSS GABLE END WALL WITH L-BENT STRAPS

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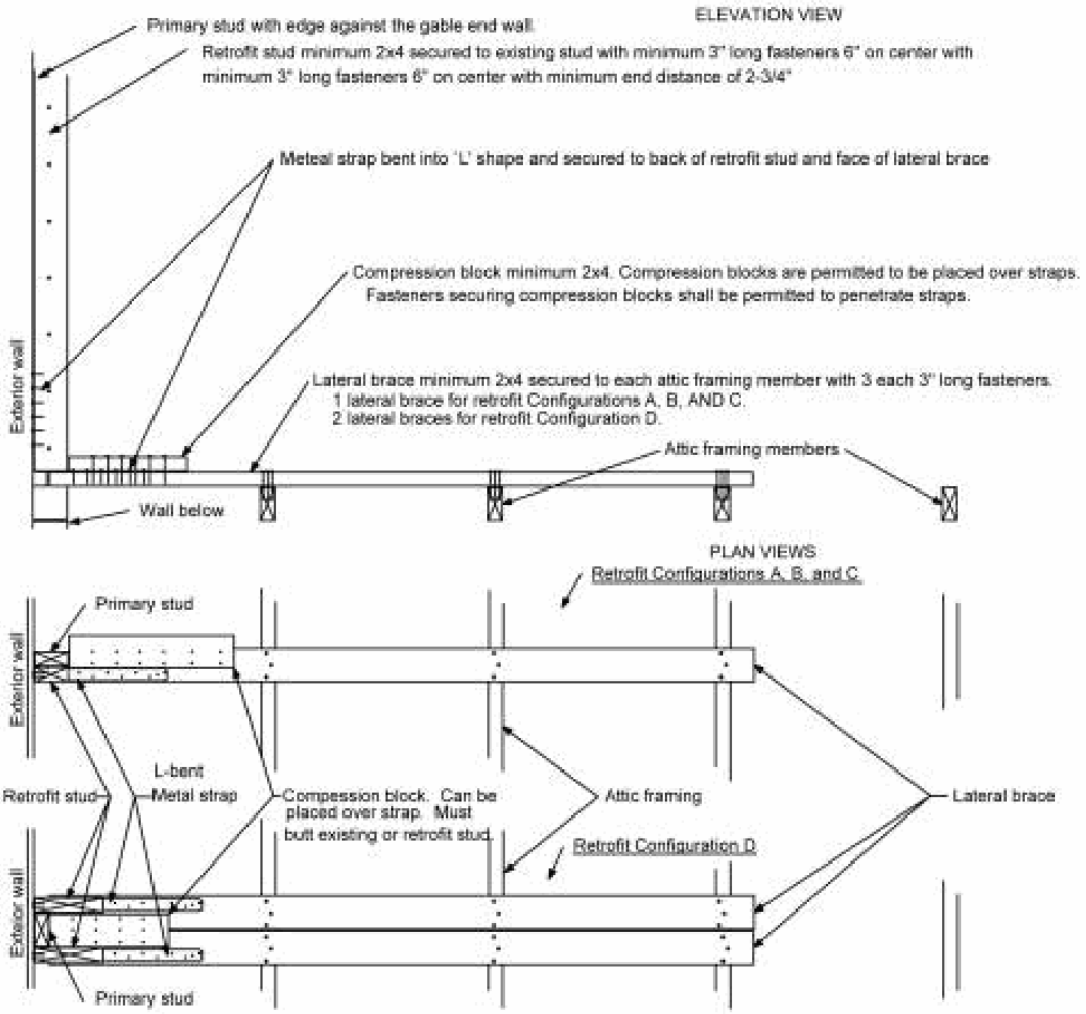


FIGURE 1707.1(2)
CONVENTIONALLY FRAME GABLE END WALL WITH L-BENT STRAPS

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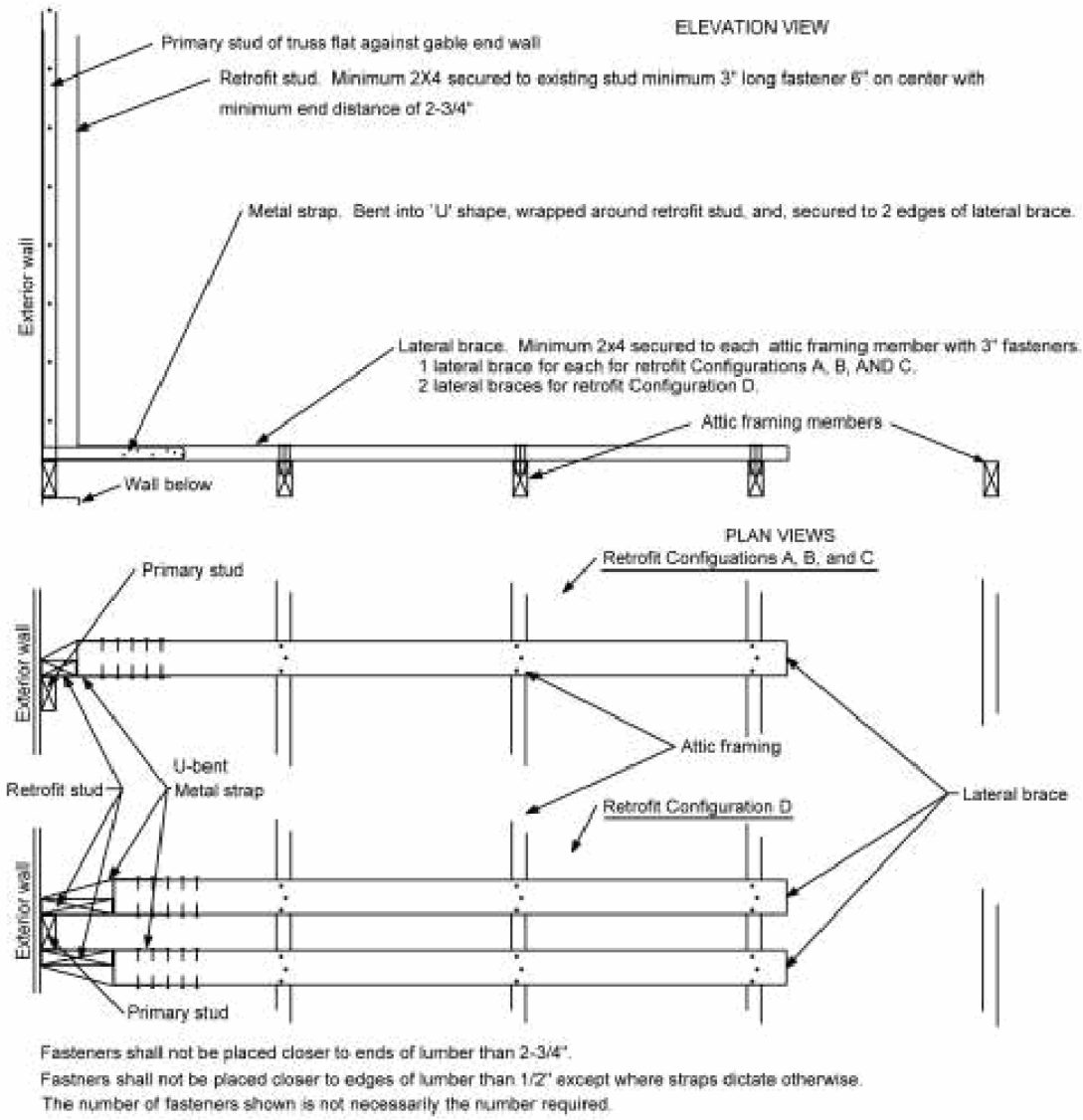


FIGURE 1707.1(3)
TRUSS GABLE END WALL WITH U-BENT STRAPS

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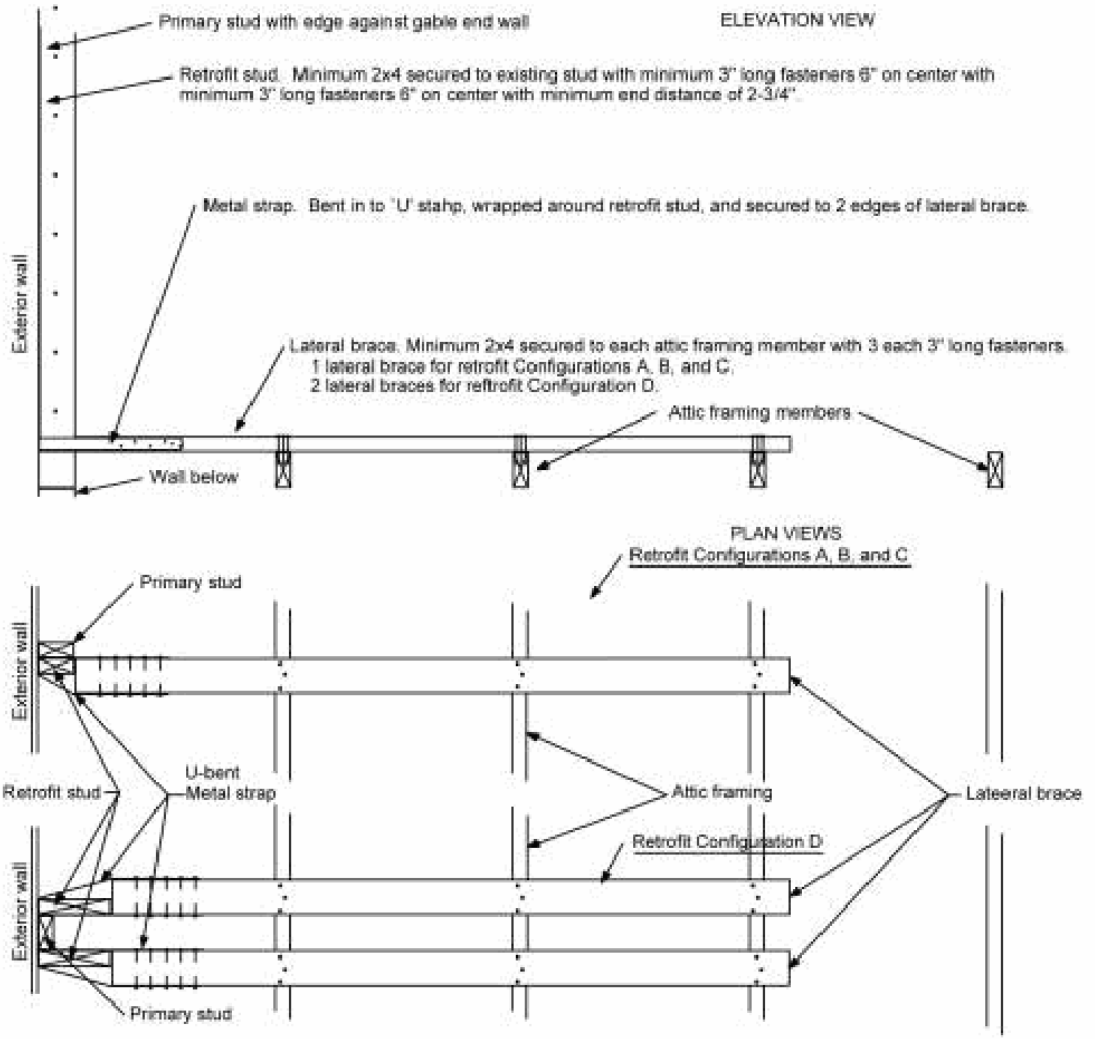


FIGURE 1707.1(4)
CONVENTIONALLY FRAME GABLE END WALL WITH U-BENT STRAPS

1707.2 Placement. Lateral braces shall be placed approximately perpendicular to the attic-framing members and extend so they are attached to a minimum of three attic-framing members. The attic-framing member farthest from the gable end wall shall be a minimum of 6 feet from the exterior sheathing or siding on the gable end wall. Lateral braces shall be installed with their wide faces across attic-framing members. Where the method of Section 1708.1 is used, lateral braces shall butt against the sheathing or siding of the wall. Where the method of Section 1708.2 is used, lateral braces shall butt against the retrofit studs.

Exception: Where existing conditions prevent placement of continuous lateral braces on attic-framing members, installation shall be in accordance with Section 1707.4.

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1707.3 Attachment of lateral braces. Lateral braces shall be attached to attic-framing members and attached to retrofit studs in accordance with this section.

1707.3.1 Attachment of lateral braces to attic framing or ridge ties. Lateral braces shall be attached to each of the attic-framing members or ridge ties that they cross with a minimum of three (3) 3-inch long fasteners. Fasteners shall be installed at least ½ inch from any edge of either the lateral brace or the attic frame member and spaced at least 1 inch apart across the width of the lateral brace as shown in Figure 1707.3.1. Lateral braces shall extend a minimum of 2-3/4 inches beyond the edge of the last attic-framing member to which they are attached.

1707.3.2 Attachment of lateral braces to retrofit studs. Attachment of lateral braces to retrofit studs shall be in accordance with Section 1708.

1707.4 Alternative installation. Where existing conditions prevent the placement of lateral braces as specified in 1707.2, the alternative installation methods of Section 1707.4.1, Section 1707.4.2, and Section 1707.4.3 shall be allowable.

1707.4.1 Omitted lateral brace. Where existing conditions prevent installation of lateral braces in accordance with Section 1707.2, lateral braces shall be permitted to be omitted for Retrofit Configurations A and B as defined in Table 1704.1 provided all of the following conditions are met. This method is not allowed for Retrofit Configurations C or D.

1. Lateral braces on each side of omitted lateral braces shall be 2x4 lumber placed approximately perpendicular to the attic-framing members and installed with their wide faces across attic-framing members. They shall be attached to a minimum of four (4) attic-framing members with attachment to the attic-framing member farthest from the gable end wall a minimum of 8 feet from the exterior sheathing or siding on the gable end wall.

2. The lateral brace on each side of an omitted lateral brace shall be fastened to each attic-framing member that they cross using three (3) 3-inch long fasteners. Fasteners shall be spaced a minimum of ½ inch from the edges of the lateral braces, a minimum of 2-3/4 inches from ends of lateral braces, and a minimum of 1 inch from adjacent fasteners.

3. A retrofit stud shall be installed in accordance with Section 1706.4 at the location of the omitted lateral brace. This retrofit stud and both of the retrofit studs on either side of the omitted lateral brace shall be sized in accordance with Table 1704.1 for the largest of the retrofit studs required at any of the three locations.

4. All three retrofit studs shall have their attic interior edges aligned such that they snuggly butt the strong back to be installed between the two lateral braces on either side of the omitted lateral brace.

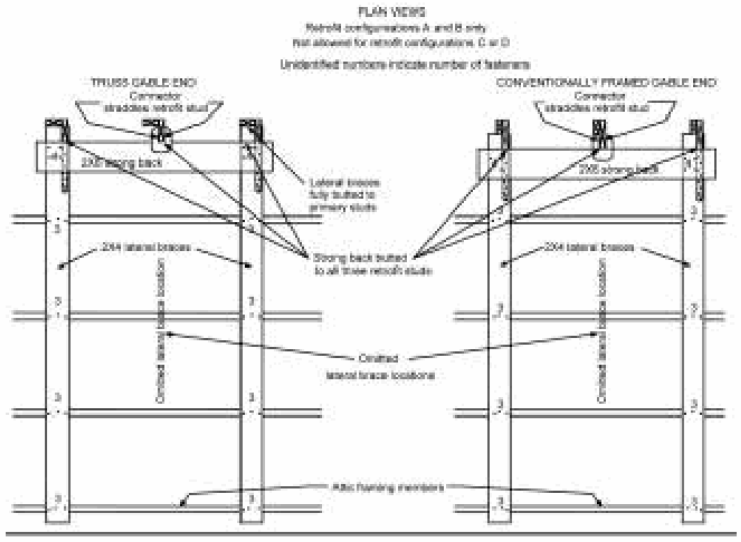
5. Retrofit studs adjacent to the omitted lateral brace shall be fastened to their corresponding lateral brace using straps in accordance with the L-bent strap method of Section 1708.1.1 except that a compression block is not required. The U-bent strap method of Section 1708.1.2 is not allowed unless U-bent straps are routed around the exterior face of primary studs.

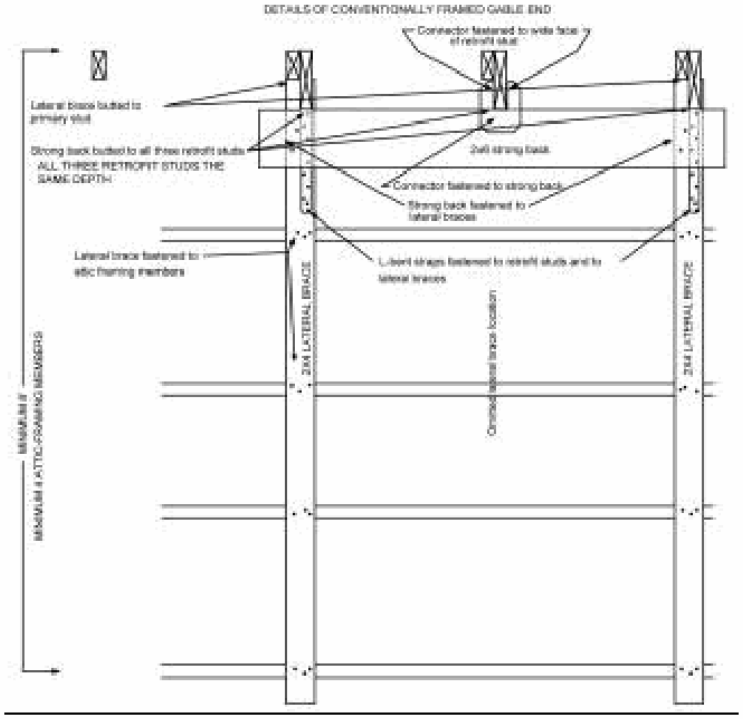
6. A strong back of minimum 2x6 lumber shall be installed parallel to the gable end and shall be located on and span between the lateral braces on the two sides of the omitted lateral brace. The strong back shall extend a minimum of 2-3/4 inches beyond the outer edges of the lateral braces and be snuggly butted against each of the three retrofit studs. The strong back shall be attached to each of the lateral braces on which it rests with four (4) 3-inch fasteners. The fasteners shall be placed a minimum 1/2 inch from all edges, a minimum of 2 inch spacing between fasteners, and a minimum of 2-3/4 inches from ends of the lumber members.

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7. The retrofit stud at the location of the omitted lateral braces shall be fastened to the strong back using an connector with minimum uplift capacity of 800 pounds as specified by the manufacturer for use with spruce-pine-fir or hem-fir lumber and installed such that this capacity is oriented in the direction perpendicular to the gable end wall.

8. Lateral braces at ends of strong backs shall be permitted to be interrupted in accordance with Section 1707.4.2; but shall not be permitted to be shortened using the alternative method of 1707.4.3.

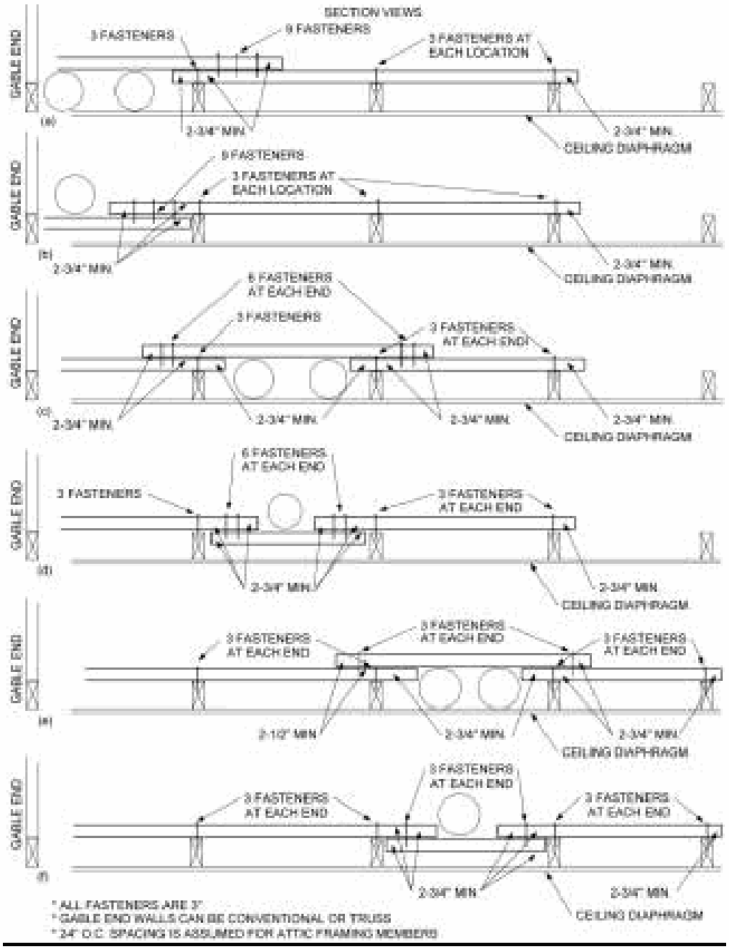




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FIGURE 1707.4.1
OMITTED LATERAL BRACE

1707.4.2 Interrupted lateral braces. Where existing conditions prevent the installation of lateral braces of required length in accordance with Section 1707.1, a splice member shall be permitted to be installed to bridge interruptions. Splice members shall be at minimum the same size lumber as the lateral braces they bridge. Although Figure 1707.4.2 illustrates the general methods that can be used where attic-framing members are spaced 24" o.c., the methods apply to other on center spacings. Splice members may extend beyond those shown and are allowed to be fastened to the main lateral brace segments farther than shown. Splice members shall be fastened at each end using the number of fasteners equal to the total number that would be required to be placed in total in that part of lateral braces more distant from the gable end wall. For a lateral brace that requires 3 fasteners at each roof framing members and installation across three roof framing members, the number of fasteners in the splice need not be more than nine fasteners if the interruption is between the gable end wall and the first attic-framing member; six fasteners if between the first and second framing members, and three fasteners if between subsequent interruptions. Fasteners shall be spaced 1/2 inch from the edges of lateral braces, 1 inch from each other, 1/2 inch from the edge of attic members, and minimum 2-3/4 inch from the ends of lateral braces and from the ends of splice members.



For SI: 1 inch = 25.4 mm

FIGURE 1707.4.2

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INTERRUPTED LATERAL BRACES

1707.4.3 Short lateral brace. Where conditions exist that prevent installation of lateral braces in accordance with Section 1707.4.1 or Section 1707.4.2, lateral braces shall be permitted to be shortened, except where the brace is adjacent to an omitted lateral brace of Section 1707.4.1, provided all of the following conditions are met.

1. The short lateral brace shall be installed across a minimum of two attic-framing members, be attached to an attic-framing member a minimum of 4 feet from the gable end wall. Where lateral braces are 2x4 they shall be fastened to each attic-framing member over which they cross with three (3) 3-inch fasteners. Where lateral braces are 2x6 or wider they shall be fastened to each attic-framing member over which they cross with four (4) 3-inch fasteners.

2. An anchor block shall be installed in each space between attic-framing members along the length of the lateral brace except for the space next to the gable end wall.

3. Anchor blocks shall be minimum 15/32 inch plywood, 7/16 inch OSB, or nominal 2 inch thick lumber #2 spruce-pine-fir or better.

4. Anchor blocks shall have minimum wide face dimension equal to the attic-framing members at the location where the anchor block is installed. Anchor blocks shall extend between attic-framing members and butt against them or their truss plates with a maximum gap of 1/8 inch.

5. Anchor blocks shall be installed on lateral braces with their wide face on the narrow face of lateral braces. Anchor blocks shall be placed on lateral braces with their attic interior edge flash with the attic interior face of lateral braces. They are permitted to be placed on different edges of lateral braces.

6. Anchor blocks shall be fastened to lateral braces with a single row of 8d common nail, 10d common nails or #9 screws with minimum penetration into lateral braces equal to the thickness of the anchor block or 1 inch whichever is greater. The minimum number of fastener shall be the maximum that can be placed in a single row with minimum 2-3/4 inch distance between fasteners and 2-3/4 inch distance to ends of anchor blocks except that the number of fasteners need not exceed seven per anchor block. For nominal 2 inch thick lumber anchor blocks, the number of fasteners need not exceed three fasteners per anchor block.

1707.5 Lateral brace connections to webs of trusses. Where existing conditions prevent installation of lateral braces on top or bottom chords of trusses, they shall be permitted to be installed on diagonal webs or vertical members of trusses provided all of the following conditions are met.

1. Lateral braces shall be positioned as close to the ceiling or roof diaphragms as existing conditions permit without altering trusses or any of their components.

2. Anchor blocks shall be installed between each pair of attic-framing members along the length of the lateral brace except for the framing member space next to the gable end wall. Anchor blocks can be installed on the narrow or wide face of lateral braces.

3. Anchor blocks shall be minimum 15/32 inch plywood, 7/16 inch OSB, or nominal 2 inch thick #2 spruce-pine-fir lumber or better.

4. Anchor blocks shall be sized to extend towards the nearby ceiling or roof diaphragm to within 3-1/2 inches of the diaphragm. Anchor blocks shall butt against chords or diagonals or vertical webs of trusses or truss plates with a maximum gap of 1/8 inch.

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5. Anchor blocks shall be fastened to lateral braces with 8d common or 10d common nails or #9 screws with minimum penetration into lateral braces equal to the thickness of the anchor blocks or 1 inch whichever is greater. The minimum number of fastener shall be the maximum that can be placed in a row with a minimum 2-3/4 inch distance between fasteners and 2-3/4 inch distance to ends of anchor blocks except that the number need not exceed three fasteners for nominal 2 inch thick lumber anchor blocks.

1707.6 Installation at truss ridges. Where existing conditions prevent installation of lateral braces near the peak of roofs, ridge ties made of minimum 2x4 members shall be installed horizontally on faces of trusses to provide anchorage for a required lateral brace. The bottom surfaces of added ridge tie members shall be aligned so that they will support a continuous lateral brace and be installed a maximum of 4 inches below limiting existing conditions for any of the trusses used to support the lateral brace. Ridge ties shall be installed on a minimum of three trusses and on every truss member over which lateral braces pass and be attached to an attic-framing member at least 6 feet from the exterior sheathing or siding on the gable end wall. Ridge ties shall be placed on alternate sides of trusses. Ridge ties used to support lateral braces shall be fastened to each top chord member of each truss using two (2) 3-inch long fasteners and to any other truss members they cross using three (3) 3-inch long fasteners. Fasteners shall be spaced a minimum ½ inch from edges of all members and minimum of 1 inch from each other. Lateral braces shall be attached to ridge ties as required by Section 1707.3.1.

1707.8 Piggyback trusses. Piggyback truss assemblies, trusses composed of two trusses one above the other, shall be retrofitted such that a single continuous retrofit stud is installed and fastened to the primary studs of both the lower and upper truss. Primary studs shall be placed and fastened in accordance with Section 1705. The bottom chord of the upper truss shall be connected to the retrofit stud using a connector with minimum 175 pound uplift capacity.

1707.9 Outlookers. Where outlookers exist to support a gable roof overhang, the out lookers shall be attached to the gable end truss or rafter using a connector with a minimum 175 pound uplift capacity. Where the end of the out looker butts against an interior truss or rafter, the end shall be connected to the truss or rafter using a joist hanger or U shaped metal connector with a minimum capacity of 175 pounds.

SECTION 1708
ATTACHMENT OF LATERAL BRACES TO RETROFIT STUDS

1708.1 Attachment of lateral braces to retrofit studs. The top and bottom of each retrofit stud shall be attached to a lateral brace with a minimum 1-1/4 inch wide *approved* flat or coil metal straps with pre-punched holes for 10d common or 16d common nails or #9 screws. No attachment is required for the retrofit stud located at an omitted lateral brace location where connectors are in place in accordance with Section 1707.4.1. Straps shall be fastened using the size and number of fasteners in accordance with Table 1704.1. For use of L-bent straps, attachment shall comply with the method of Section 1708.1.1 and for use of U-bent straps with the method of Section 1708.1.2. Either method is allowable at either end of a retrofit stud.

1708.1.1 L-bent strap method. For Configurations A, B, and C, retrofit studs shall be attached to lateral braces in accordance with Figure 1708.1.1 and Figure 1707.1(1) or 1707.1(2). For Configuation D, retrofit studs shall be attached to lateral braces in accordance with Figure 1708.1.2 and Figure 1707.1(1) or Figure 1707.1(2). Attachments shall comply with the following conditions except where attachments of retrofit studs at omitted lateral braces are in conformance with Section 1707.4.1.

1. A strap of the gage specified in Table 1704.1 shall be installed to the retrofit stud and lateral brace such that one end of the strap is applied vertically to the retrofit stud on its vertical narrow face nearest the exterior of the gable end wall, bent 90 degrees, and applied horizontally to the wide horizontal face of the lateral brace.

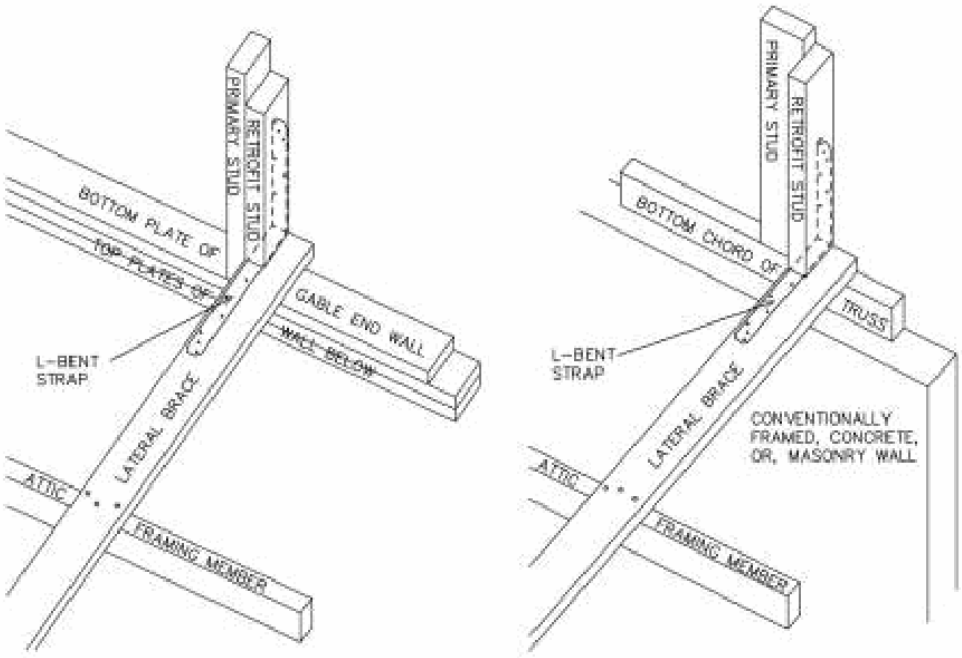
2. Straps shall be long enough and bent appropriately so that the number of fasteners required by Table 1704.1 can be installed while maintaining a minimum distance of 2-3/4 inches from fasteners to the end of retrofit studs and long enough to clear the retrofit stud end butting the lateral brace.

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3. Straps shall be permitted to be twisted or bent where they transition between the tops of retrofit studs and lateral braces to follow roof pitch. Straps shall be bent only once at a given location though it is permissible that they be bent or twisted at multiple locations along their length. The right angle bend of straps over the ends of retrofit studs shall be crisp.

4. Compression blocks shall be placed on the lateral braces and butted directly against the primary stud or the retrofit stud. Figure 1706.2.1(1) (trusses) and Figure 1706.2.1(2) (conventionally framed) show the placement of a compression block against the existing stud. The minimum contact area between compression blocks and primary or retrofit studs shall be an area equivalent to 1-1/2 inches by 1-1/2 inches (2.25 square inches). Angled contact is permissible. Compression blocks shall be allowed to be placed over straps or beside straps.

5. Compression blocks shall be fastened to lateral braces using the number of 3-inch fasteners required by Table 1704.1. Fasteners shall be placed such they are a minimum 2-3/4 inches from the ends of compression blocks, a minimum 2-3/4 inches from each other along the length of compression blocks, and a minimum ½ inch from edges of both compression blocks and lateral braces. Fasteners securing compression blocks are allowed to penetrate straps.



Conventionally framed gable end wall — Truss framed gabled end wall

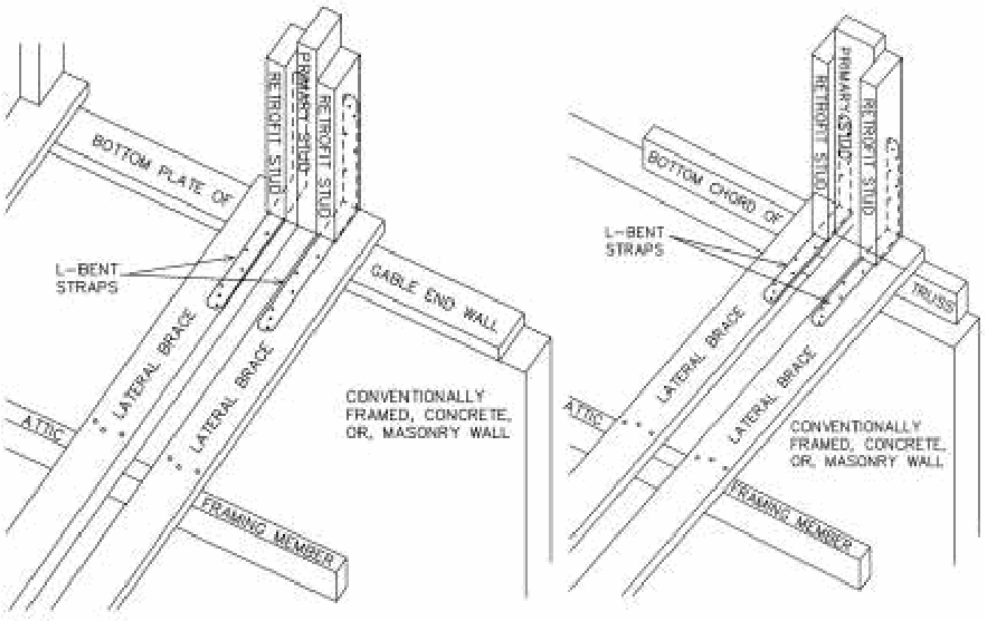
Compression blocks are not shown for clarity. Views are from within the attic.

FIGURE 1708.1.1(1)
L-BENT STRAP METHOD FOR CONFIGURATIONS A, B, AND C

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S5890 Text Modification

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Conventionally framed gable end wall Truss framed gabled end wall

Compression blocks are not shown for clarity. Views are from within the attic.

FIGURE 1708.1.1(2)
L-BENT STRAP METHOD FOR CONFIGURATION D

1708.1.2 U-bent strap method. For Configurations A, B, and C, retrofit studs shall be attached to lateral braces in accordance with Figure 1708.1.2 and Figure 1707.1(3) or 1707.1(4). For Configuration D, retrofit studs shall be attached to lateral braces in accordance with Figure 1708.1.3 and Figure 1707.1(3) or Figure 1707.1(4). Attachments shall comply with the following conditions except where attachments of retrofit studs at omitted lateral braces are in conformance with Section 1707.4.1.

1. A strap of the gage specified in Table 1704.1 shall be wrapped around the back edge of the retrofit or primary stud and extended onto the two narrow edges of the lateral brace.

2. Lateral braces shall be placed such that one narrow face of the lateral brace is aligned with one wide face of the primary or retrofit stud and the strap shall be bent such that it is in contact with the narrow edge closest to the gable end wall of the primary or retrofit stud being wrapped.

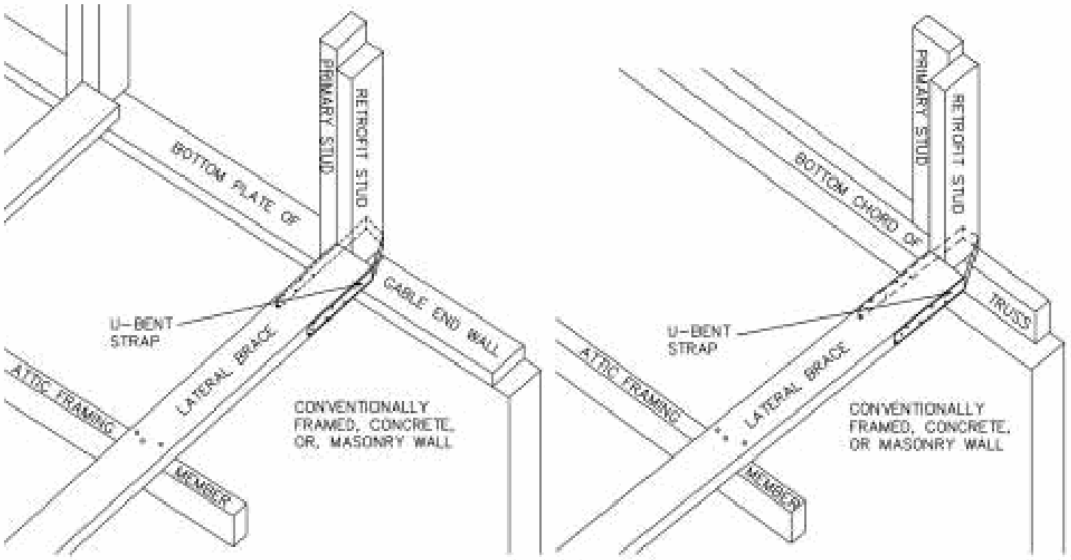
3. At the back of primary or retrofit studs, the two bends of straps shall be crisp.

4. Lateral braces shall butt snugly against the primary or retrofit stud with a maximum gap of ¼ inch.

5. Straps shall be attached to lateral braces using the number of 1-1/2 inch long fasteners specified in Table 1704.1. Fasteners for straps shall be placed minimum 2-3/4 inches from ends of lateral braces.

6. Straps shall be permitted to be twisted or bent where they transition between the tops of retrofit studs and lateral braces that follow roof pitch. Straps shall be bent only once at a given location though it is permissible that they be bent or twisted at multiple locations along their length.

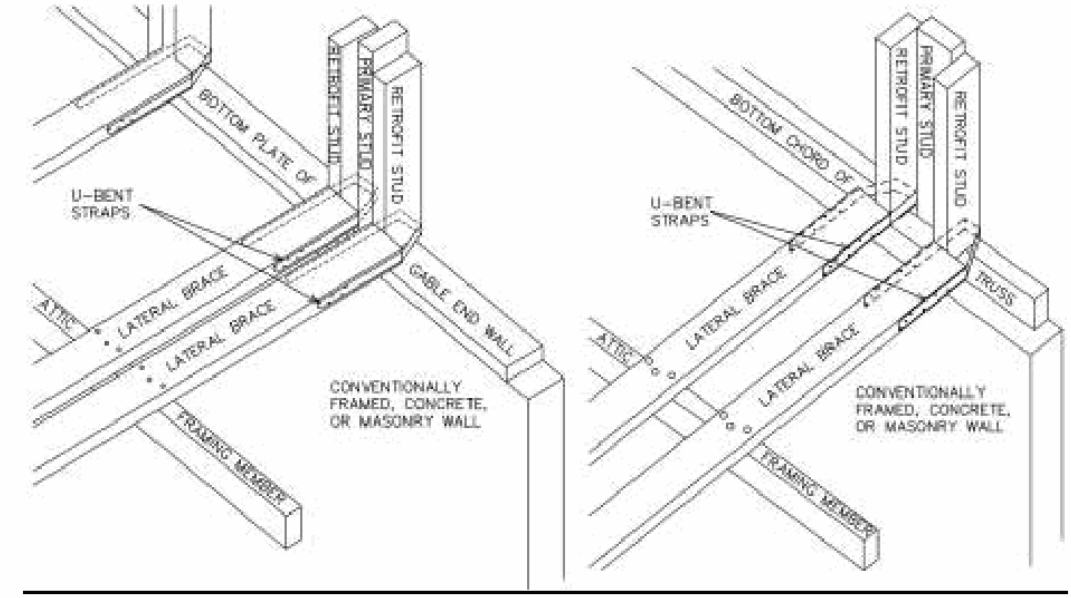
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Conventionally framed gable end wall Truss framed gable end wall

Views are from within the attic.

FIGURE 1708.1.2(1)
U-BENT STRAP METHOD FOR CONFIGURATIONS A, B, AND C



Conventionally framed gable end wall Truss framed gable end wall

FIGURE 1708.1.2(2)
U-BENT STRAP METHOD FOR CONFIGURATION D

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SECTION 1709
CONNECTIONS TO WALL BELOW

1709.1 Requirements. Along gable ends where primary studs are longer than 3 feet, gable end walls shall be connected to the wall below using the methods prescribed in Section 1709.1.

1709.1.1 Truss gable end wall. Truss gable end walls shall be attached to the wall below using gusset angle brackets fastened to the bottom chord of roof trusses and to the wall below and spaced in accordance with Table 1704.1. Fasteners shall be placed a minimum of 5/8 inch from edges of lumber. Fasteners shall be permitted to penetrate truss plates. Four fasteners shall be effectively installed through each leg of gusset angles.

Exception: Where existing conditions prevent effective installation of all four fasteners into each leg of a gusset angle bracket, a supplementary gusset angle bracket shall be installed a minimum of 2-3/4 inches from and a maximum of 8 inches from the one without the four fasteners in each leg. The number of effectively installed fasteners securing the corresponding leg of the supplementary gusset angle bracket shall at least equal the number not effectively installed on the first gusset angle bracket.

1709.1.1.1 Wood Frame Wall Below. Where the wall below a gable end is a wood frame wall, a gusset angle bracket specified by the manufacturer for lumber-to-lumber applications shall be installed using fasteners of the same type supplied / specified by the manufacturer. Fasteners installed in top plates shall extend through the full depth of the lowest top plate.

1709.1.1.2 Concrete or Masonry Wall Below. Where the wall below a gable end wall is a concrete or masonry wall, connections shall be by one of the following methods.

2.1 Where the wall below does not have a sill plate on top of the bond beam, a gusset angle bracket specified by the manufacturer for lumber-to-concrete or lumber-to-masonry applications shall be installed directly to the concrete or masonry of the wall below and to the bottom chord of the truss.

2.2 Where there is a sill plate of any thickness on top of the bond beam a gusset angle bracket specified by the manufacturer for lumber-to-concrete or lumber-to-masonry applications shall be installed on the sill plate with fasteners passing vertically through the gusset angle bracket and sill plate and connecting directly into the concrete or masonry wall below. Fasteners of the same diameter and style supplied / specified by the gusset manufacturer shall be installed that have sufficient length to penetrate the sill plate and embed into the concrete or masonry to the same depth provided by the fasteners supplied / specified by the gusset angle bracket manufacturer for installation directly into concrete.

2.3 Where there is a sill plate on top of the bond beam that is a minimum 1-1/2 inches thick, a gusset angle bracket specified by the manufacturer for lumber-to-lumber applications shall be fastened to the sill plate. Gusset angle brackets shall be fastened to the sill plate using 4 each 1-1/2 inch long fasteners of the same type supplied / specified by the gusset angle manufacturer for wood connections. Regardless of how well the sill plate may be attached to the wall, it shall be anchored to the wall below on each side of the gusset angle bracket using concrete screws of the same type and size and number as those as those supplied / specified by the gusset manufacturer for concrete or masonry connections. They shall be embedded into the concrete or masonry to the same depth intended for the fasteners supplied / specified by the manufacturer of gusset angles installed in concrete. Washers of minimum 3/8 inch diameter shall be placed under heads of those fasteners. Fasteners shall be placed a minimum of 2-3/4 inches and a maximum of 8 inches from the required gusset angle bracket.

1709.1.2 Platform framed gable end wall. Conventionally framed gable end walls shall be attached to the wall below in accordance with one of the following methods.

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1709.1.2.1 Stud connections. The bottom end of each primary stud of gable end walls shall be connected to bottom members using one of the following methods.

1. Where a sill plate for the gable end wall exists, the bottom end of each primary stud shall be connected to the sill plate using a stud-to-plate metal connector with minimum uplift capacity of 175 pounds.

2. Where a wood frame gable end wall has a ceiling joist as the lowest outer member of the gable end wall, the primary studs shall be connected to the joist using a stud-to-plate metal connector with minimum uplift capacity of 175 pounds positioned on the wide face of the joist near the top of the joist so that it extends up the stud where the stud is full width.

1709.1.2.2 Wall connections. The gable end walls shall be connected to the wall below using one of the following methods.

1. Where there is a wood frame wall below a gable end wall and where the gable end wall above has a sill or bottom plate atop the plates of the wall below, the sill of the gable end wall shall be connected to the top plates of the wall below using minimum 5/8 inch diameter lag bolt of sufficient length to penetrate through the lower top plate of the wall below. Lag bolts shall be placed minimum 1-5/8 inches from edges of lumber. The lag bolts shall be installed at the spacing indicated in Table 1704.1.

2. Where a wood frame gable end wall has a ceiling joist as the lowest outer member of the gable end wall, that joist shall be connected to the wall below using the method Section 1709.1.1(1) or 1709.1.1 except read 'ceiling joist' for 'bottom chord of roof truss'.

3. Where the wall below a gable end wall is a concrete or masonry wall, the sill or bottom plate of the gable end wall shall be connected to the wall below using ¼ inch diameter concrete or masonry screws of the same type used for gusset angles and of sufficient length to provide a minimum embedment of 1-1/2" into the concrete of the wall or a minimum 2-3/4 inches into the masonry of the wall. A washer sized for the diameter of the lag bolt or wood screw shall be placed under the head of each lag bolt. The fasteners shall be installed at the spacing indicated in Table 1704.1.

1709.1.3 Balloon framed gable end wall. The retrofits presented in this chapter are specifically intended for platform framed gable end walls.

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S5757

Date Submitted	7/30/2012	**Section**	606.4	**Proponent**	Joseph Hetzel
Chapter	6	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Continues requirements for garage door, exterior door, skylight, and operable and inoperable window replacement.

Rationale

Continues the replacement provisions for garage doors, exterior doors, skylights, and operative and inoperative windows.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Continues improved efficiency in enforcing the code from a product replacement standpoint.

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

No adverse impact.

Impact to industry relative to the cost of compliance with code

No adverse impact.

Requirements

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

Contributes to public health, safety and welfare by clarifying product replacement requirements.

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

Preserves improvement of the code.

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

Proponent BOAF CDC **Submitted** 9/23/2012 **Attachments** No

Comment:

Where is the code change language?

The provision this is based upon has sunset with the other Florida Changes to the 2010 FBC

Because a code provision was in the 2010 FBC does not make it Florida specific.

The amendment does not demonstrate by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variations addressed by the foundation code. Per FS 553.73 (7) (g)

The proposed amendment was does not appear to have been submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

S5757-G1

S5757 Text Modification

Carry forward the text as written in all of Section 606.4 (including the two Exceptions) in the 2010 Florida Building Code, Existing Buildings volume.

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Date Submitted	7/6/2012	**Section**	[B]706.3.2	**Proponent**	Michael Goolsby
Chapter	7	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

While this entire Chapter is applicable for the HVHZ it makes reference and provides direction to sections which are not applicable for the HVHZ. The purpose of this proposed modification is to provide guidance to the applicable and equivalent HVHZ sections. In this way, compliance with the intent of these provisions can be maintained in all jurisdictions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Removes confusion by providing accurate direction regarding application of applicable code sections.

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

Removes confusion by providing accurate direction regarding application of applicable code sections.

Impact to industry relative to the cost of compliance with code

Removes confusion by providing accurate direction regarding application of applicable code sections.

Requirements

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

It does so by ensuring direction to applicable sections of the code are provided.

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

It does so by ensuring direction to applicable sections of the code are provided.

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

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Does not degrade the effectiveness of the code

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S4966 Text Modification

[B] 706.3.2 Roof diaphragms resisting wind loads in high-wind regions. Where roofing materials are removedfrom more than 50 percent of the roof diaphragm or sectionof a building located where the basic wind speed isgreater than 90 mph or in a special wind region, as definedin Section 1609(the HVHZ shall comply with Section 1620) of the International Building Code, roofdiaphragms, connections of the roof diaphragm to roofframing members, and roof-to-wall connections shall beevaluated for the wind loads specified in the InternationalBuilding Code, including wind uplift. If the diaphragmsand connections in their current condition are not capableof resisting at least 75 percent of those wind loads, theyshall be replaced or strengthened in accordance with the **loads** specified in the International Building Code.

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Date Submitted	7/16/2012	**Section**	706	**Proponent**	Ken Cureton
Chapter	7	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Add SECTIONS 706.1.1, 706.4 and 706.5

Rationale

To comply with s. 553.73(7)(a) Florida Statutes, the proposed modification will supplement the most current version of the International Existing Building Code (IEBC) base code with Florida specific requirements in accordance with the Commission's approved code change process for the update to the 2013 Florida Building Code. The proposed modification is necessary in order to carry forward the provisions of the 2010 Florida Building Code that resulted from Declaratory Statements, provisions specific to the High Velocity Hurricane Zone (HVHZ) and the Commission's Working Group initiatives of formatting and improving the application of the Florida Building Code – Existing Building.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

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

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Requirements

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Does not degrade the effectiveness of the code

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

The proposed code change was submitted in accordance with the Commission's update process for the 2013 FBC in order to carry forward the provisions of the 2010 Florida Building Code that resulted from Declaratory Statements, provisions specific to the High Velocity Hurricane Zone (HVHZ) and the Commission's Working Group initiatives of formatting and improving the application of the Florida Building Code – Existing Building.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5147-G1

Proponent BOAF CDC **Submitted** 9/23/2012 **Attachments** No

Comment:

No data or justification was provided.

The amendment does not demonstrate by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variations addressed by the foundation code. Per FS 553.73 (7) (g)

The proposed amendment was does not appear to have been submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

Add **SECTION 706.1.1** as follows:

Section 706.1.1 Nonstructural alteration. Nonstructural alterations exclusive of fixtures and furniture, the cost of which does not exceed 25 percent of the replacement value of the existing building or structure, with the approval of the building official may be made of the same material of which the building or structure is constructed.

Add **SECTION 706.4** as follows:

706.4 Replacement of windows and doors. The replacement of garage doors, exterior doors, skylight, operative and inoperative windows shall be designed and constructed to comply with Chapter 16 of the *Florida Building Code, Building*.

Exceptions:

1. Opening protection exception: For one- and two-family dwellings constructed under codes other than the *Florida Building Code* and located in windborne debris regions, the replacement of garage doors and exterior doors with glazing, sliding glass doors, glass patio doors, skylights, and operable and inoperable windows within any 12-month period shall not be required to have opening protection but shall be designed for wind pressures for enclosed buildings, provided the aggregate area of the glazing in the replaced components does not exceed 25 percent of the aggregate area of the glazed openings in the dwelling or dwelling unit.

2. Opening protection exception for High Velocity Hurricane Zones: For one-and two-family dwellings constructed under codes prior to September 1, 1994 the replacement of exterior doors with glazing, sliding glass doors, glass patio doors, skylights, and operable and inoperable windows within any 12 month period shall not be required to have opening protection provided the aggregate area of the glazing in the replaced components does not exceed 25 percent of the aggregate area of the glazed openings in the dwelling or dwelling unit.

Add **SECTION 706.5** as follows:

706.5 Openings in sunrooms, enclosed balconies and enclosed porches constructed under existing roofs or decks are not required to be protected, provided the space is separated from the building interior by a wall and all openings in the separating wall are protected in accordance with Section 1609.1.4 of the *Florida Building Code, Building*. Such spaces shall be permitted to be designed as enclosed or partially enclosed. (High Velocity Hurricane Zones must comply with Chapter 16 of the *Florida Building Code, Building*.)

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Exceptions:

1. Exterior balconies or porches under existing roofs or decks enclosed with screen or removable vinyl and acrylic panels complying with the Florida Building Code, Building, Section 2002.3.3 shall not be required to be protected and openings in the wall separating the unit from the balcony or porch shall not be required to be protected unless required by other provisions of this code

2. High Velocity Hurricane Zones must comply with Chapter 16 of the *Florida Building Code, Building*.

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Date Submitted	7/31/2012	**Section**	1007	**Proponent**	Ken Cureton
Chapter	10	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Modify SECTION 1007.1

Rationale

To comply with s. 553.73(7)(a) Florida Statutes, the proposed modification will supplement the most current version of the International Existing Building Code (IEBC) base code with Florida specific requirements in accordance with the Commission's approved code change process for the update to the 2013 Florida Building Code. The proposed modification is necessary in order to maintain correlation with the High Velocity Hurricane Zone (HVHZ) requirements as well as the Florida Building Codes – Accessibility and Energy Conservation.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

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

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Requirements

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Does not degrade the effectiveness of the code

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

The proposed code change was submitted in accordance with the Commission's update process for the 2013 FBC in order to maintain correlation with the High Velocity Hurricane Zone (HVHZ) requirements as well as the Florida Building Codes – Accessibility and Energy Conservation.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

Proponent BOAF CDC **Submitted** 9/17/2012 **Attachments** No

Comment:

Unnecessary, The Florida existing code supplement should have the same intro stating where the code proscribe the use of the International code use the corresponding Florida code. And an intro stating the HVHZ requirements apply projects in the HVHZ Area.

S5875-G1

General Comment - 08/09/2012 - 09/23/2012

S5875-G2

Proponent BOAF CDC **Submitted** 9/23/2012 **Attachments** No

Comment:
This code change is unnecessary as the provisions contained in the proposed amendment are adequately addressed in the applicable international code. Per FS 553.73 (7) (g)

Because a code provision was in the 2010 FBC does not make it Florida specific.

The amendment does not demonstrate by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variations addressed by the foundation code. Per FS 553.73 (7) (g)

The proposed amendment was does not appear to have been submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

Modify **SECTION 1007.1** as follows:

1007.1 Gravity loads. Buildings or portions thereof subject to a change of occupancy where such change in the nature of occupancy results in higher uniform or concentrated loads based on ~~Table 1607.1 of the *International Building Code*~~the *Florida Building Code, Building* Tables 1607.1 and 1607.6 (high-velocity hurricane zones shall comply with Table 1615.2) shall comply with the gravity load provisions of the ~~*International Building Code.*~~ *Florida Building Code, Building*.

Exception: Structural elements whose stress is not increased by more than 5 percent.

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Date Submitted	7/31/2012	**Section**	1007	**Proponent**	Ken Cureton
Chapter	10	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Modify SECTION 1007.2

Rationale

To comply with s. 553.73(7)(a) Florida Statutes, the proposed modification will supplement the most current version of the International Existing Building Code (IEBC) base code with Florida specific requirements in accordance with the Commission's approved code change process for the update to the 2013 Florida Building Code. The proposed modification is necessary in order to maintain correlation with the High Velocity Hurricane Zone (HVHZ) requirements as well as the Florida Building Codes – Accessibility and Energy Conservation.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

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

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Requirements

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Does not degrade the effectiveness of the code

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

The proposed code change was submitted in accordance with the Commission's update process for the 2013 FBC in order to maintain correlation with the High Velocity Hurricane Zone (HVHZ) requirements as well as the Florida Building Codes – Accessibility and Energy Conservation.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

Proponent BOAF CDC **Submitted** 9/17/2012 **Attachments** No

Comment:
The Florida existing code supplement will have the same intro stating where the code proscribe the use of the International code use the corresponding Florida code. And an into stating the HVHZ requirements apply projects in the HVHZ Area.

S5878-G1

Modify **SECTION 1007.2** as follows:

1007.2 Snow and Wind loads. Buildings and structures subject to a change of occupancy where such change in the nature of occupancy results in higher wind or snow risk categories based on ~~Table 1604.5 of the *International Building Code*~~ the *Florida Building Code, Building* Table 1604.5, (high -velocity hurricane zones shall comply with Table 1615.2) shall be analyzed and shall comply with the applicable wind load or snow provisions of the ~~*International Building Code.*~~ *Florida Building Code, Building*.

Exception: Where the new occupancy with a higher importance factor is less than or equal to 10 percent of the total building floor area. The cumulative effect of the area of occupancy changes shall be considered for the purposes of this exception.

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Date Submitted	7/31/2012	**Section**	1103	**Proponent**	Ken Cureton
Chapter	11	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Modify Section 1103.2

Rationale

To comply with s. 553.73(7)(a) Florida Statutes, the proposed modification will supplement the most current version of the International Existing Building Code (IEBC) base code with Florida specific requirements in accordance with the Commission's approved code change process for the update to the 2013 Florida Building Code. The proposed modification is necessary in order to implement legislative mandates as well as the Florida Building Codes – Accessibility and Energy Conservation.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

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

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Requirements

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Does not degrade the effectiveness of the code

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

The proposed code change was submitted in accordance with the Commission's update process for the 2013 FBC in order to implement legislative mandates as well as the Florida Building Codes – Accessibility and Energy Conservation.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

Proponent BOAF CDC **Submitted** 9/23/2012 **Attachments** No

Comment:

Because a code provision was in the 2010 FBC does not make it Florida specific.

The amendment does not demonstrate by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variations addressed by the foundation code. Per FS 553.73 (7) (g)

The proposed amendment was does not appear to have been submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

S5869-G1

S5869 Text Modification

Page: 1

Modify **SECTION 1103.2** as follows:

1103.2 Additional gravity loads. Existing structural elements supporting any additional gravity loads as a result of additions shall comply with the ~~*International Building Code.*~~ *Florida Building Code, Building.*

Exceptions:

1. Structural elements whose stress is not increased by more than 5 percent.

2. Buildings of Group R occupancy with no more than five dwelling units or sleeping units used solely for residential purposes where the existing building and the addition comply with the conventional light-frame construction methods ~~of the *International Building Code* or the provisions of the *International Residential Code.*~~ as defined in Chapter 2.

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Date Submitted	7/31/2012	**Section**	New Chapter 17	**Proponent**	T Stafford
Chapter	16	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Relocates the retrofit provisions in the appendix of the IEBC to new Chapter 17 for consistency with the 2010 FBCEB. This proposal also includes updates to the version in the appendix of the IEBC.

Rationale

As stated for the original Florida adopted chapter, gable ends are a major risk to buildings from high winds because of inadequate construction practices and code requirements of the past with the chapter presenting an affordable means of retrofitting.

Reason for replacing the existing chapter of the code
The reason to replace the version to appear in the 2012-2013 ICC code IEBC with this one is that this one is an advanced generation that was not ready for submittal in that cycle or in the current I-Code cycle with a submittal date of January 3, 2012.
Although the engineering values and implantation methods issues are substantially the same as in previous versions, this second generation version has been revised to make the general presentation substantially more accessible, the figures have been simplified by being less cluttered, and the number of tables have been reduced by combining five tables into a single one far easier to use. The engineering has been somewhat revised to reflect the results of a complete engineering review.
Combined, these improvements make the chapter far more accessible thus leading to better compliance. When readers understand the retrofit process, they are more apt to better comply, inspectors will better understand what they are looking for, and contractors will be more apt to get it right the first time and encourage building owners to strengthen their buildings using the more accessible code as a prescriptive method. Further, the added clarity will make it more apt that retrofitting will actually be undertaken because the implementers will have a better understanding of the process and its goals.
A small part of the text incorporates changes accepted by the 2012-2013 ICC structural committee hearings in April 2012.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This prescriptive modification greatly facilitates plans review and inspection by providing a standardized methodology.

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

There is no cost unless a building or property owner voluntarily opts for a gable end retrofit.

Impact to industry relative to the cost of compliance with code

There is no cost to industry for compliance.

Requirements

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

Gable ends are a known weakness in the vast majority of buildings not constructed and inspected to modern high wind standards. Strengthening gable ends improves the safety of occupants of buildings at risk and occupants of nearby buildings and it improves the general welfare of the public.

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

The modification provides a prescriptive method for strengthening gable ends that reduces the cost of retrofitting by not requiring a reinvention of the method and facilitating building inspections by the codification of a standard retrofit measure.

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

There is no discrimination of materials or products.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

YES

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

General Comment - 08/09/2012 - 09/23/2012

S5888-G1

Proponent BOAF CDC **Submitted** 9/23/2012 **Attachments** No

Comment:

This is the Voluntary Gable End Bracing.

There are not any referenced standards specified in this change or the cross reference to them

The amendment does not demonstrate by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variations addressed by the foundation code. Per FS 553.73 (7) (g) There is no supporting data

S5888 Text Modification

See uploaded support file. Entire code proposal is on the uploaded support file.

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SECTION 1701
GENERAL

1701.1 Purpose. This chapter provides prescriptive methods for partial structural retrofit of an existing building to increase the resistance of gable end walls to out-of-plane wind loads. It is intended for voluntary use and for reference by mitigation programs. The provisions of this chapter do not necessarily satisfy requirements for new construction. Unless specifically cited, the provisions of this chapter do not necessarily satisfy requirements for structural improvements triggered by addition, alteration, repair, change of occupancy, building relocation or other circumstances.

1701.2 Eligible condition. The provisions of this chapter are applicable to buildings that meet all of the following eligibility requirements:

1. The building is Occupancy R3 (1-2 family dwellings)
2. The building includes one or more wood-framed gable end walls constructed using platform framing techniques.
3. The building shall have a *mean roof height* of 35' or less.
4. The building includes attic-framing members in the area where retrofit members will be installed shall be made of conventional lumber assembled with nails or the like or with truss plates.
5. The wall below a gable end wall being retrofitted shall be made of conventional lumber assembled with nails or the like or with truss plates or the wall shall be made of concrete or masonry.
6. Each gable end wall being retrofitted has or will be provided with studs or vertical webs spaced 24 inches on center maximum.
7. Each gable end wall being retrofitted has a maximum height of 16 ft.
8. The building is or would be assigned to risk category I or II per *Florida Building Code* Table 1704.5.
9. The ceiling diaphragm of the retrofitted building in the area of the retrofit shall be comprised of minimum ½ inch gypsum board, minimum nominal 3/8 inch wood structural panels, or plaster.
10. The roof diaphragm of the building in the area of the retrofit shall be of minimum nominal 4'x8' paneling made of plywood, oriented strand board, or similar, or boards butted to each other along their long edges and ends.

1701.3 Compliance. All modifications required for conformance with this chapter shall be designed and constructed in accordance with the *Florida Building Code* or *Florida Residential Code* provisions for new construction except as specifically modified by this chapter.

SECTION 1702
DEFINITIONS

ADDED STUD. Studs installed in a gable end wall to provide the required minimum spacing between existing wall studs prior to adding any retrofit studs needed to brace or stiffen the gable end wall.

ATTIC-FRAMING MEMBERS. Structural members such as ceiling joists, rafters, and roof trusses that support ceiling diaphragms or roof decking.

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BALLOON FRAMING. A type of wall framing where vertical wall framing members of the gable end wall and the rectangular wall below are continuous from the top of the gable end wall to the bottom of the rectangular wall below.

COMPRESSION BLOCK. A piece of lumber used to restrain an existing or retrofit stud against movement or deflection toward the interior of the building, attached to a lateral brace and bearing directly against the primary or retrofit stud.

EXISTING STUD. A stud in a gable end wall that already exists before the installation of added studs or conducting gable end bracing and stiffening using lateral braces or retrofit studs.

GABLE END WALL. The triangular wall segment at a gable end whose framing members may be conventionally framed, balloon framed, or framed with a truss.

GABLE END TRUSS. A roof truss at an exterior wall with lumber members oriented with their wide faces parallel to the plane of the wall.

GUSSET ANGLE BRACKET. Metal connectors intended by the manufacturer to be connect materials at right angles to each other supplied by the manufacturer with fasteners.

LATERAL BRACE. A lumber member typically installed horizontally on the top of attic floor framing members or on the bottom of pitched roof framing members used to transfer both compression and tension loads applied by a gable wall existing, added or retrofit stud into either the ceiling or roof diaphragm.

NAIL PLATE. A manufactured metal plate made of galvanized steel with factory punched holes for fasteners. A nail plate may have the geometry of a strap.

PLATFORM FRAMING. A type of wall framing where vertical framing members of the gable end wall terminate at or above the top plate on the rectangular wall below the gable end wall.

PRIMARY STUD. An existing or added stud as defined above. A vertical member installed against the gable end wall sheathing and connected to the top and bottom chords of the gable end framing that provides the required minimum spacing of structural members supporting the wall sheathing.

RETROFIT. The process of strengthening or improving buildings or structures, or individual components of buildings or structures for the purpose of making existing conditions better serve the purpose for which they were originally intended or the purpose that current building codes intend.

RETROFIT STUD. A vertical lumber member used to supplement the strength or stiffness of an existing or added (primary) stud.

STUD-TO-PLATE CONNECTOR. A manufactured metal connector designed to connect studs to lumber plates.

SECTION 41703
MATERIALS

1703.1 Existing materials. All existing lumber framing members to which retrofit components will be attached shall be in sound condition suitable for their purpose. Ceiling and roof diaphragms in the area of lateral braces shall be in sound condition suitable for their purpose.

1703.2 New and replacement materials. All new and replacement materials shall comply with the requirements of the *Florida Building Code* or the *Florida Residential Code* as applicable.

1703.3 Material specifications for retrofits. Materials for retrofitting gable end walls shall comply with Table 1703.3.

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TABLE 1703.3
MATERIAL SPECIFICATIONS FOR RETROFITS

Component	Minimum Size or Thickness	Minimum Material Grade or Type	Minimum Capacity
All lumber	2 inch nominal thickness Minimum depth will vary according to application	#2 Spruce-Pine-Fir (S) or better	Not applicable
Gusset angle bracket	14 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood, wood-to-CMU, or wood-to-concrete.	350 pounds uplift and lateral load
Stud-to-plate connector	14 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood	500 pounds uplift
Metal connectors	20 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood, wood-to-CMU, or wood-to-concrete.	Not applicable
Nail plates and straps	20 gage thickness	Galvanized sheet steel *approved* for connecting wood-to-wood.	Not applicable

1703.4 Nominal sizes. For the purposes of this code, where dimensions of lumber are specified, they shall be deemed to be nominal dimensions.

1703.5 Fasteners. Fasteners shall meet the requirements of Table 1703.6, Sections ~~s~~ 1703.6.1, and Section 1703.6.2, and shall be permitted to be screws or nails meeting the minimum length requirement shown in the figures and specified in the tables of this chapter. Fasteners used to secure connectors shall be those approved by the manufacturer.

1703.5.1 Screws. Unless otherwise indicated in this Appendix, screw sizes and lengths shall be in accordance with Table 1703.5. Permissible screws include deck screws and wood screws. Fine threaded screws, finish screws, or drywall screws shall not be permitted.

1703.5.2 Nails. Unless otherwise indicated in this Chapter, nail sizes and lengths shall be in accordance with Table 1703.5.

TABLE 1703.5
NAIL AND SCREW REQUIREMENTS

Minimum Fastener Length	Fastener Type	Shank Diameter (Neglecting galvanizing) Minimum and maximum	Minimum Length of thread	Minimum Head Diameter
1-1/2 inches	#9 screws	0.177 inches	1-1/4"	0.28 inches
	8d common nails	0.131 inches	Not applicable	0.28 inches
3 inches	#9 screws	0.177 inches	1-1/2"	0.28 inches
	10d common nails	0.148 inches	Not applicable	0.28 inches

For SI: 1 inch = 25.4 mm

1703.6. Metal connectors and nail plates. Metal plate connectors, nail plates, stud-to-plate connectors, straps and anchors shall be manufactured from galvanized steel and be products *approved* for connecting wood-to-wood or

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wood-to-concrete as appropriate for the application. Nail plates shall have holes sized for a minimum of 8d or 10d nails or #9 screws.

SECTION 1704
GENERAL REQUIREMENTS AND MEANS OF RETROFIT

1704.1 General requirements. The strengthening scheme provided by this chapter requires the installation of lateral braces, retrofit studs, and other load path components to supplement existing framing. Figure 1704.1 shows the general schematic arrangement of the various elements. Lateral braces and retrofit studs shall be installed at each primary stud as specified in Section 1706 and Section 1707. At each primary stud subject to strengthening, the retrofit configuration shall be determined in accordance with Table 1704.1. Retrofitting shall be in accordance with Section 1705 for installation of added studs where existing ones are too far apart, Section 1706 for the establishment of locations for retrofits and the installation of retrofit studs that strengthen primary studs, Section 1707 for the installation of lateral braces that connect ceiling and roof diaphragms via attic-framing members, Section 1708 for the two methods for the installation of straps that connect the ends of retrofit studs to lateral braces, and Section 1709 for connection of a gable end wall to the wall below.

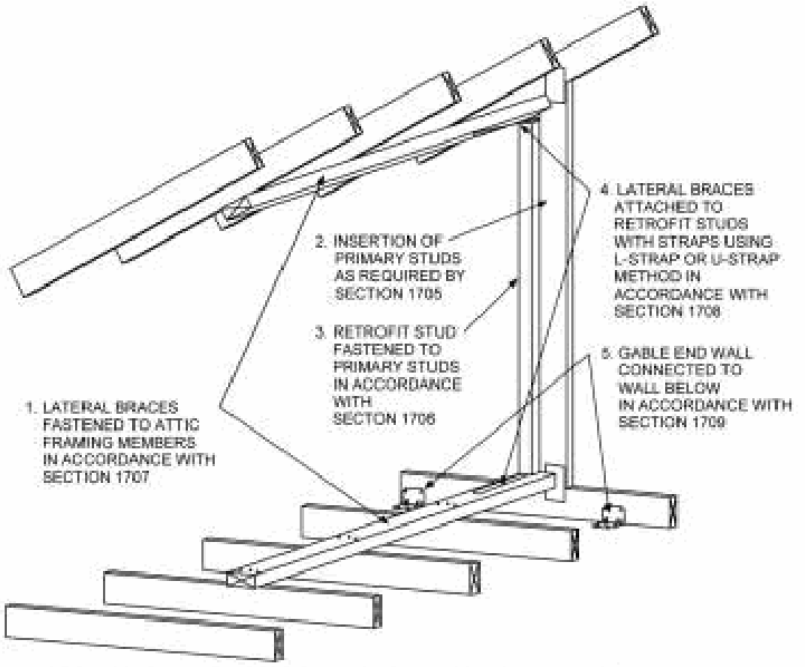


FIGURE 1704.1
GENERAL MEANS OF GABLE END RETROFIT

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TABLE 1704.1
RETROFIT CONFIGURATION AS A FUNCTION OF EXPOSURE CATEGORY, DESIGN WIND SPEED, AND STUD HEIGHT

RETROFIT ELEMENTS				SIZE AND NUMBER OF RETROFIT ELEMENTS Stud length limitations based on Exposure, Basic Wind Speed, and Configuration			
Exposure Category	Max 3-sec gust Basic Wind Speed (Interpolation is not permitted)	Connections of gable end wall to wall below. On center spacing (Section 1708)		Configurations A, B, C, or D			
		Gusset angle bracket	Fasteners to secure sill plate to wall	**A**	**B**	**C**	**D**
D	< or =130 mph	39"	14"	6'-11"	10'-11"	14'-3"	16'-0"
D	>130 - 140 mph	34"	12"	6'-7"	10'-5"	13'-7"	16'-0"
D	>140 - 150 mph	29"	10"	6'-2"	9'-9"	12'-10"	16'-0"
D	>150 - 160 mph	26"	9"	5'-11"	9'-1"	12'-0"	15'-4"
D	>160 - 170 mph	23"	8"	5'-6"	8'-7"	11'-4"	14'-9"
D	>170 - 180 mph	20"	7"	5'-2"	8'-1"	10'-8"	14'-2"
C	< or =130 mph	46"	16"	7'-4"	11'-6"	15'-1"	16'-0"
C	>130 - 140 mph	39"	14"	7'-0"	10'-11"	14'-5"	16'-0"
C	>140 - 150 mph	34"	12"	6'-8"	10'-5	13'-8"	16'-0"
C	>150 - 160 mph	30"	11"	6'-4"	9'-10"	13'-0"	16'-0"
C	>160 - 170 mph	27"	9"	5'-11"	9'-3"	12'-3"	15'-6"
C	>170 - 180 mph	24"	8"	5'-7"	8'-9"	11'-7"	15'-0"
B	< or =130 mph	63"	22"	8'-2"	12'-10"	16'-0"	(a)
B	>130 - 140 mph	54"	19"	7'-9"	12'-2"	15'-0"	(a)
B	>140 - 150 mph	47"	17"	7'-5"	11'-8"	15'-3"	16'-0"
B	>150 - 160 mph	42"	15"	7'-1"	11'-2"	14'-7"	16'-0"
B	>160 - 170 mph	37"	13"	6'-10"	10'-8"	14'-0"	16'-0"
B	>170 - 180 mph	33"	12"	6'-7"	10'-4"	13'-6"	16'-0"
Retrofit studs Minimum size and number (Section 1706)				2x4	2x6	2x8	2 each 2x8
Lateral brace above and below (top and bottom) Minimum size and number (Section 1707)				2x4	2x4	2x4	2 each 2x8
Retrofit Elements for **L-bent strap** applications (Section 1708.1)							
Fasteners at each end for strap connecting Retrofit studs to Lateral braces using 1-1/2 inch long fasteners complying with Table 1703.6 Minimum number				3	5	6	5 at each end of each strap
Fasteners to connected Compression blocks to Lateral braces using 3-inch long fasteners complying with Table 1703.6 Minimum number				4	6	7	5
Retrofit Elements for **U-bent strap** applications (Section 1708.2)							
Fasteners to connect straps to each edge of Lateral braces using 1-1/2 inch long fasteners complying with Table 1703.6 Minimum number				3	4	4	4 at each end of each strap

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

(a) Configuration C is allowable.

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SECTION 1705
ADDED STUDS

1705.1 Requirements for added studs. Along a platform framed gable end wall where an existing stud is longer than 3 feet and the distance (centerline to centerline) between that stud and an adjacent stud that is also longer than 3 feet is greater than 22-1/2 inches, an added stud shall be installed. This requirement also applies to the top truss of a piggyback truss assembly. The length of the stud shall be the maximum length of the stud itself exclusive of the depth of the top chord and bottom chord members. If an existing stud is interrupted by other members, such as by a diagonal in a gable end truss, it shall include pieces above and below the interrupting member to provide continuity from the top of the bottom chord to the bottom of the top chord of the gable end framing, or wood structural members shall be added to provide this continuity. If a lateral brace is being omitted as allowed in Section 1707.4.1, then the existing or added stud shall not be required to be continuous from an interruption to the location of the omitted lateral brace. Added studs shall have at minimum the same narrow and wide face dimensions as the existing studs.

1705.2 Placement of added studs. Added studs shall be installed with the same orientation as existing studs. Added studs of piggyback trusses shall align with required primary studs in the truss below.

1705.3 Attachment of added studs. In the case of conventional framing, each end of each required added stud shall be attached to the top and bottom plates. In the case of truss construction, each end of each required added stud shall be attached to the top and bottom chord of the truss. Attachments shall be made using a stud-to-plate metal connector with minimum uplift capacity of 175 pounds fastened with 1-1/2 inch long fasteners complying with Table 1703.5.

1705.4 Interrupted or short existing studs. Existing studs longer than 3 feet that extend to only one end of attic-framing members shall be retrofitted using the methods of Section 1706.6. Existing studs that are interrupted shall be retrofitted using the methods of Section 1706.7.

SECTION 1706
RETROFIT STUDS

1706.1 Requirements for retrofit studs. Except as allowed by Section 1706.5, a retrofit stud shall be installed at each primary stud longer than 3 feet where lateral braces can be installed using the methods of Section 1707. The size of retrofit studs shall be as required by Table 1704.1 for the appropriate retrofit configuration. Where straps are installed using the L-bent strap method of Section 1708.1.1, retrofit studs shall extend from the top of the lower lateral brace up to the bottom of the upper lateral brace except that a maximum gap of 1/8 inch is allowed at the bottom and ½ inch at the top. Where straps are installed using the U-bent method of Section 1708.1.2, retrofit studs shall extend beyond the ends of lateral braces such that lateral braces can fully butt against the retrofit studs.

Exception: A retrofit stud need not be added where the distance between it and an adjacent retrofit, primary stud would be less than 14-1/2 inches.

1706.2 Piggyback trusses. Primary studs of piggyback truss assemblies shall have retrofit studs sized and placed such that a single continuous retrofit stud is installed and fastened to the primary stud of both the lower and upper truss. Added studs shall be placed and fastened in accordance with Section 1705. The bottom chord of the upper truss shall be connected to the retrofit stud using an *approved* connector with minimum tension capacity of 175 pounds.

1706.3 Placement of retrofit studs. Retrofit studs and nailers can be placed on either side of primary studs. Retrofit studs shall be installed in accordance with one of the following methods.

1706.3.1 Method (a): Face to edge or to face method. Retrofit studs shall be placed immediately adjacent to primary studs as indicated in Figure 1706.3(a) such that retrofit studs overlap the edge or side of the primary stud by a minimum of 1-1/4 inches. Fasteners shall be placed in accordance with Section 1706.4.1.

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1706.3.2 Method (b): Butted retrofit stud method. Retrofit studs shall be placed such that the narrow face of retrofit studs butt against primary studs as indicated in Figure 1706.3(b). Retrofit studs shall be attached to primary studs with nail plates as indicated in Figure 1706.3(b). Nail plates shall be spaced and attached in accordance with Section 1706.4.2.

1706.3.3 Method (c): Offset retrofit stud method. Retrofit studs shall be placed such that the retrofit stud is offset from the primary stud by use of nail plates such that the nail plate can be affixed as indicated in Figure 1706.3(c) and Figure 1706.4.2 provided the fastening conditions of Section 1706.4.2 are met.

1706.3.4 Method (d): Nailer with retrofit stud method. Retrofit studs and existing studs shall be connected using minimum 2x4 nailers as indicated in Figure 1706.3(d) provided the following conditions are met. Nailers may be comprised of multiple members lengthwise.

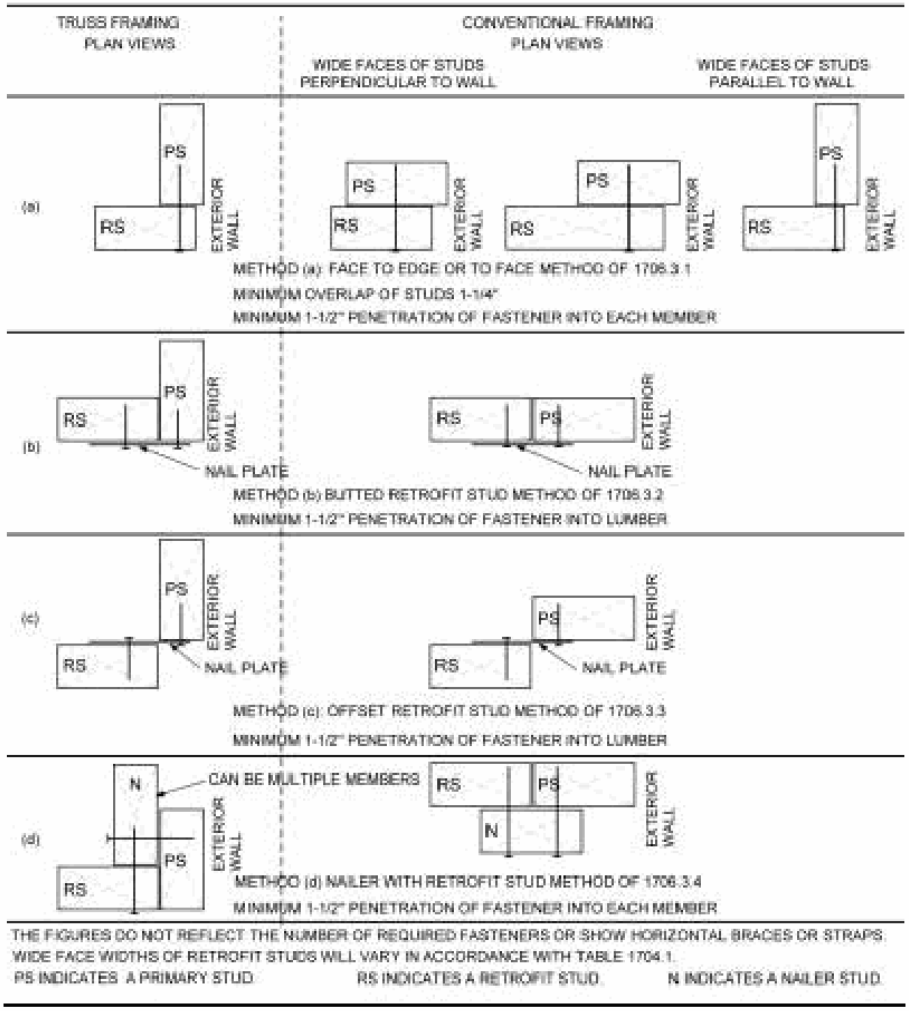
1. Both the primary stud and the retrofit stud shall be butted to nailers and both shall be fastened to the nailer with 3-inch fasteners. Fasteners connecting each stud to the nailer shall be spaced 6 inches on center.

2. Fasteners into nailers through the face of either member shall be offset vertically by a minimum of 2-3/4 inches.

3. Fasteners into nailers shall be a minimum of 2-3/4 inches but not more than 6 inches from the end of the shorter of the primary stud or retrofit stud to which they are fastened.

4. Fasteners shall be placed minimum ½ inch from the edges of studs.

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For SI: 1 inch = 25.4 mm

FIGURE 1706.3
PLACEMENT OF RETROFIT STUDS

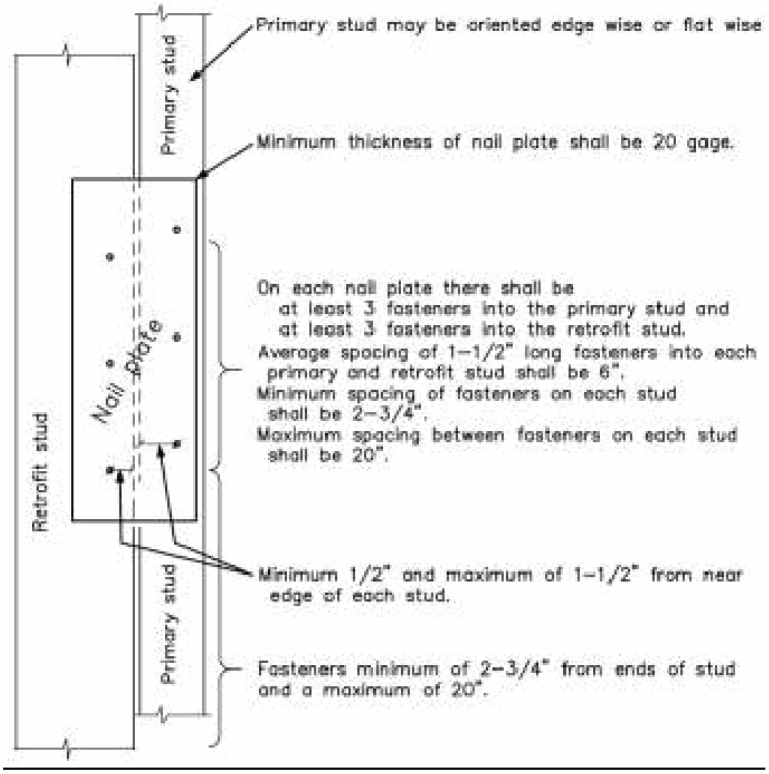
1706.4 Attachment of retrofit studs to primary studs. Retrofit studs, nail plates, and nailers shall be fastened in accordance with the following.

1706.4.1. Fastener attachments. Where retrofit studs are placed using the methods of Section 1706.3.1 or Section 1706.3.4, retrofit studs shall be attached to primary studs and nailers shall be attached to primary studs and retrofit studs using minimum 3-inch long fasteners. Fastener penetration into each member shall be a minimum 1-1/2 inch. Fasteners can be installed from either face of studs or nailers. Fasteners shall be a minimum of 2-3/4 inches on center along through the face of either member along the length of studs and from ends of studs, and a maximum of 6 inches on center, minimum ½ inch to edges of studs, and minimum 1 inch across studs. Fasteners into nailers from any direction shall be offset vertically a minimum of 2-3/4 inches. Fasteners shall be minimum 2-3/4 inches from ends of lumber.

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1706.4.2. Nail plate attachments. Where retrofit studs are placed using the methods of Section 1706.3.2 or Section 1706.3.3, nail plates shall be spaced and attached in accordance with all of the following requirements.

1. Nail plates shall be spaced such that vertical spacing between plates shall be a maximum of 20 inches.
2. There shall be at least 3 fasteners through each nail plate into both the primary and retrofit studs.
3. Fasteners used to secure nail plates to studs shall be a minimum 1-1/2 inch long and fasteners shall be a minimum of 2-3/4 inches and a maximum of 6 inches from the ends of retrofit studs.
4. Fasteners placed in nail plates shall be spaced a minimum of 2-3/4 inches along the length of lumber and 2-3/4 inch from ends of lumber.
5. Fasteners shall be placed a minimum of a ½ inch from the edges of the studs and a maximum of 1-1/2 inches from the abutting vertical edges of primary and retrofit studs.
6. Staggered fasteners used to secure nail plates shall be spaced horizontally a minimum of ½ inches.



For SI: 1 inch = 25.4 mm

FIGURE 1706.4.2
NAIL PLATE FASTENING

1706.4 Reduced width of retrofit studs. The broad face of retrofit studs may be reduced in width by methods of cutting, boring, or notching at any number of locations along their length provided that all of the following conditions are met.

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1. The wide face of retrofit studs shall be sized such that the remaining minimum width of the member at each location of reduced width shall not be less than that required by Table 1704.1.

2. The distance between segments of reduced width shall be a minimum of 8 inches and shall be allowable at the ends of retrofit studs.

3. The average spacing of fasteners connecting retrofit studs to existing studs shall be maximum 6 inches on center.

4. The minimum vertical distance between fasteners on studs shall be a minimum of 2-3/4 inches.

5. Retrofit studs reduced in width shall not be spliced within 12 inches of the location of reduced width. Splice members shall not be notched.

1706.6 Omitted retrofit stud – Ladder assembly. Where existing conditions prevent installation of a full length retrofit stud in accordance with Section 1706.1 or Section 1707.4, the retrofit stud and its associated two lateral braces shall be permitted to be wholly or partially omitted from that location by installation of a ladder assembly for Retrofit Configurations A and B as defined in Table 1704.1 provided all of the following conditions are met. This method is not allowed for Retrofit Configurations C or D.

1. No more than two ladder assemblies are permitted on a single gable end.

2. There shall be at least two retrofit studs and lateral brace assemblies on each side of the location where a retrofit stud is omitted.

3. Where both of the retrofit studs on each side an omitted retrofit stud would be required by Table 1704.1 to be 2x4, they shall both be 2x6. Where either retrofit stud on the side of an omitted stud would be required by Table 1704.1 to be 2x6, they both shall be 2x8. Where either retrofit stud on the side of an omitted stud would be required by Table 17o4.1 to be 2x8, they both shall be 2x10

4. Lateral braces adjacent to the omitted lateral brace shall be minimum 2x6 lumber extend over four roof framing members and be fastened to each of the four attic-framing member crossed using minimum four (4) 3-inch long fasteners. Fasteners shall be installed in accordance with Section 1706.4.

5. Ladder rungs shall be of minimum 2x4 lumber installed horizontally with their wide face oriented horizontally and installed to span between the retrofit studs on either side of the omitted retrofit stud. The edge of the ladder rung shall bear against the primary stud at the location of the omitted retrofit stud. Ladder rungs shall be vertically spaced a maximum of 16 inches on center.

6. Where ladder rungs cross and bear against the primary stud at the location of the omitted retrofit stud, they shall be attached to the primary stud using a stud-to-plate connector with a minimum capacity of 175 pounds in the direction perpendicular to the gable end wall. Ladder rungs shall be attached to the retrofit studs on both sides of the location where the retrofit stud is omitted using two 3-inch long fasteners driven through the retrofit stud and into the end of the ladder rung.

7. Notching of the ladder rungs shall not be permitted unless the net depth of the ladder rung is a minimum of 3-1/2 inches in the area of the notch.

1706.7 Interrupted primary studs. Where primary studs are interrupted because of existing conditions and where existing conditions permit, a retrofit stud shall be installed that bridges the interruption. It shall be attached to the primary stud both below and above the interruption, sized in accordance with Table 1704.1 for the total length, placed in accordance with Section 1706.3, and attached in accordance with Section 1706.4 along the portion of its length that is in contact with the primary stud.

1706.8 Short retrofit studs. Where existing conditions are such that a lateral brace installed in accordance with Section 1707 can only be installed at one end of a primary stud extends to a lateral brace at only a ceiling or a roof

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diaphragm such that a lateral brace can be installed in accordance with Section 1707, the method of retrofit shall comply with Section 1706.7.

1706.9 Spliced retrofit studs. Retrofit studs shall be permitted to be spliced provided all of the following conditions are met.

1. Retrofit studs shall be butted to one another at the splice joint and a minmum 4 foot length of splice member shall be centered at the butt joint.

2. Lumber splice members shall be nominal 2 inch lumber with the wide face width equal to or wider than the face width of the spliced retrofit studs.

3. Splice members shall be attached to each of the retrofit stud members on each side of the splice with minimum 7 rows of 3 fasteners for a total of 21 fasteners. Rows of fasteners shall be minimum 2-3/4 inches from the end of the splice member, minimum 2-3/4 inches from the splice joint and ends of members, and spaced evenly along the 18 inch splice overlap between these two limits.

SECTION 1707
LATERAL BRACES

1707.1 Requirements for lateral braces. At each end of a retrofit stud, a lateral brace shall be installed as indicated in Figure 1707.1(1) or Figure 1707.1(3) for trusses and Figure 1707.1(2) or Figure 1707.1(4) for conventionally framed gable end walls. Lateral braces shall be allowed to be omitted in accordance with Section 1706.6 or Section 1707.3. Alternative methods for providing lateral bracing are allowable in accordance with Sections 1707.4.1. Lateral braces shall be minimum 2x4 lumber except as required by Section 1707.4.1 or Section 1706.6.

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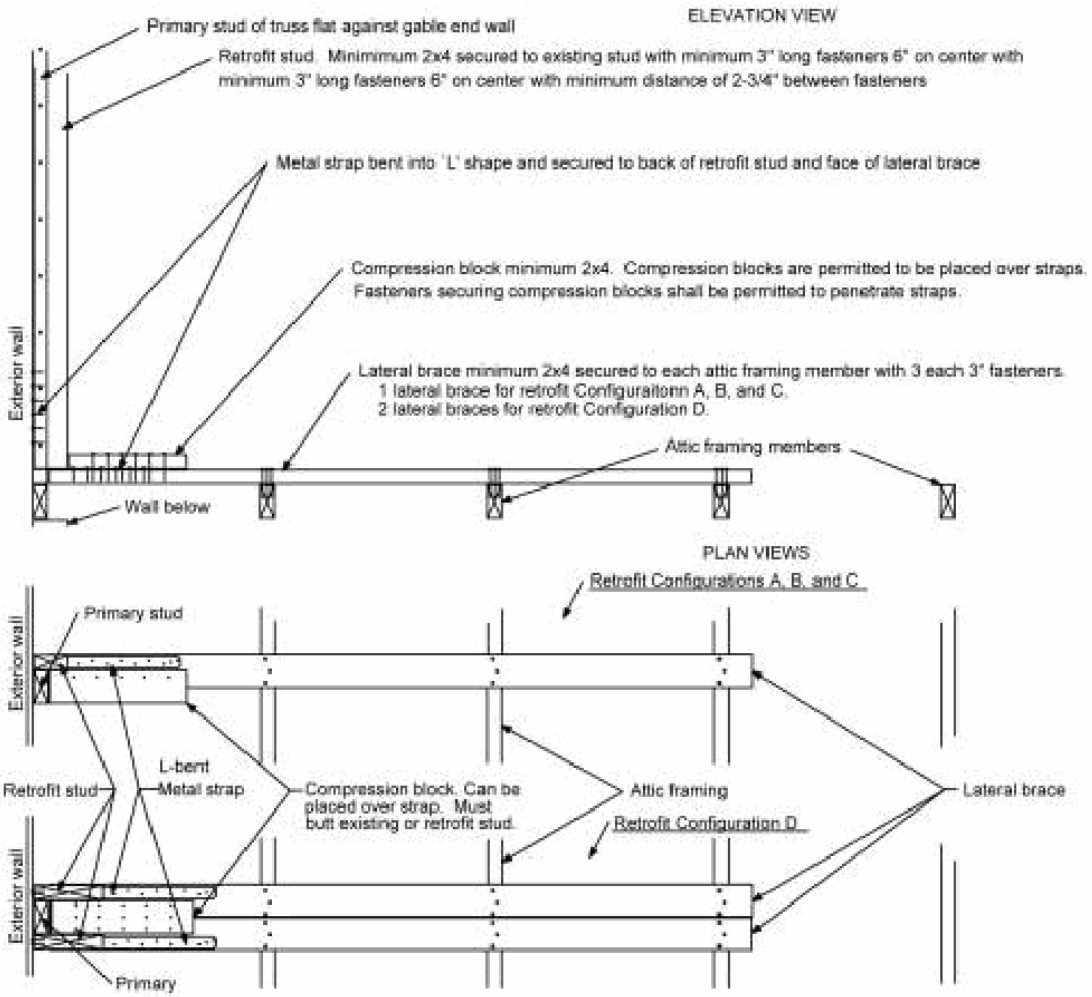


FIGURE 1707.1(1)
TRUSS GABLE END WALL WITH L-BENT STRAPS

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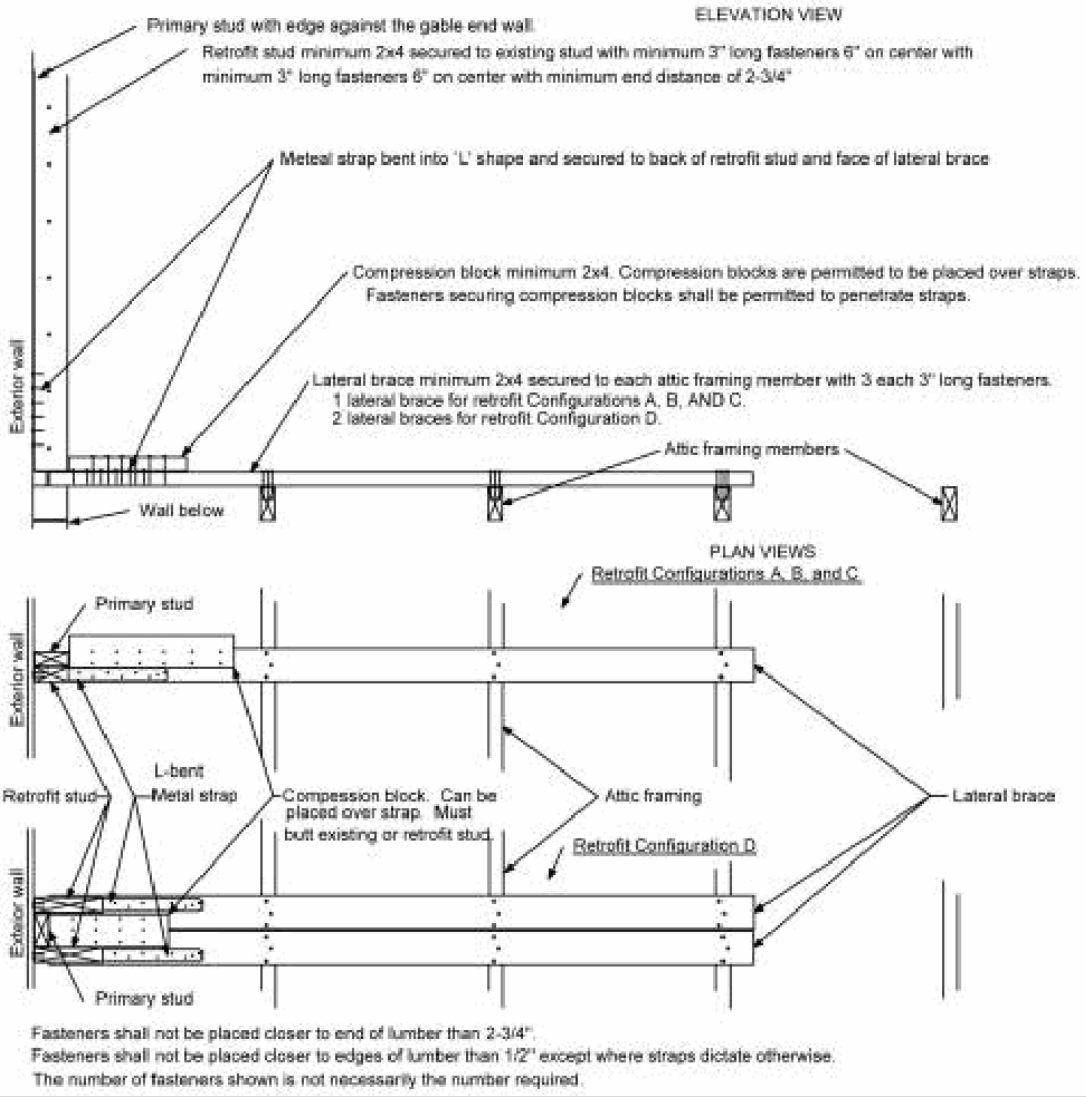


FIGURE 1707.1(2)
CONVENTIONALLY FRAME GABLE END WALL WITH L-BENT STRAPS

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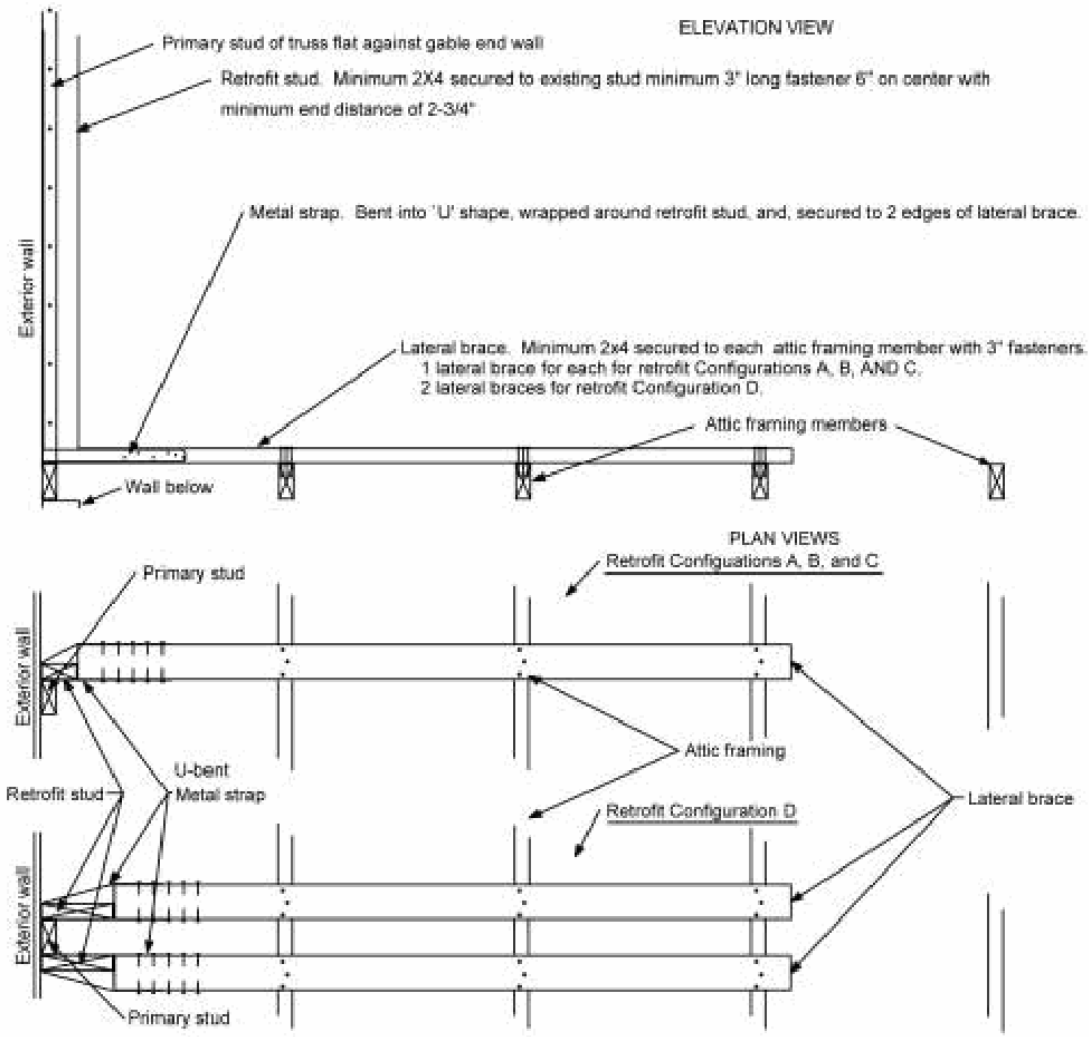


FIGURE 1707.1(3)
TRUSS GABLE END WALL WITH U-BENT STRAPS

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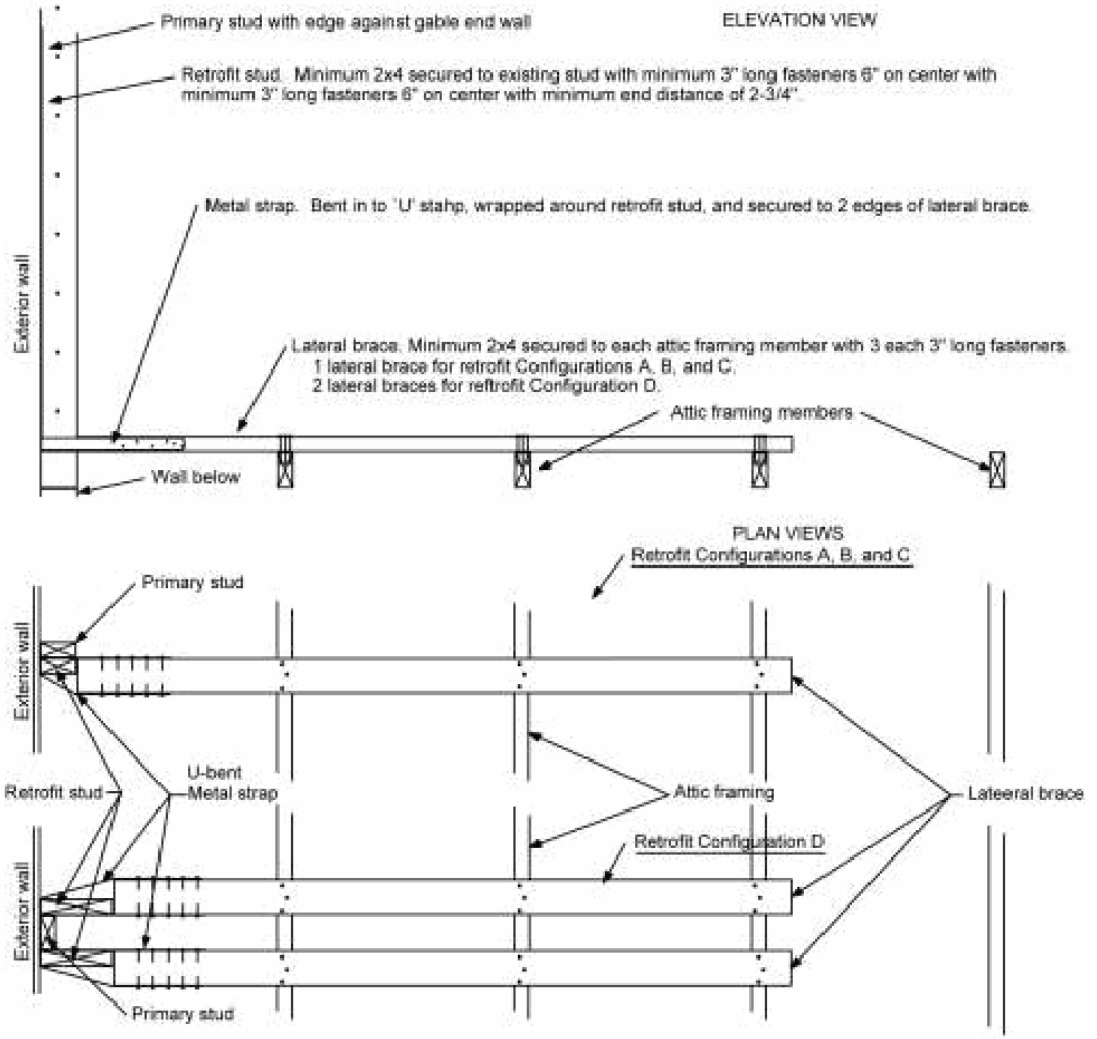


FIGURE 1707.1(4)
CONVENTIONALLY FRAME GABLE END WALL WITH U-BENT STRAPS

1707.2 Placement. Lateral braces shall be placed approximately perpendicular to the attic-framing members and extend so they are attached to a minimum of three attic-framing members. The attic-framing member farthest from the gable end wall shall be a minimum of 6 feet from the exterior sheathing or siding on the gable end wall. Lateral braces shall be installed with their wide faces across attic-framing members. Where the method of Section 1708.1 is used, lateral braces shall butt against the sheathing or siding of the wall. Where the method of Section 1708.2 is used, lateral braces shall butt against the retrofit studs.

Exception: Where existing conditions prevent placement of continuous lateral braces on attic-framing members, installation shall be in accordance with Section 1707.4.

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1707.3 Attachment of lateral braces. Lateral braces shall be attached to attic-framing members and attached to retrofit studs in accordance with this section.

1707.3.1 Attachment of lateral braces to attic framing or ridge ties. Lateral braces shall be attached to each of the attic-framing members or ridge ties that they cross with a minimum of three (3) 3-inch long fasteners. Fasteners shall be installed at least ½ inch from any edge of either the lateral brace or the attic frame member and spaced at least 1 inch apart across the width of the lateral brace as shown in Figure 1707.3.1. Lateral braces shall extend a minimum of 2-3/4 inches beyond the edge of the last attic-framing member to which they are attached.

1707.3.2 Attachment of lateral braces to retrofit studs. Attachment of lateral braces to retrofit studs shall be in accordance with Section 1708.

1707.4 Alternative installation. Where existing conditions prevent the placement of lateral braces as specified in 1707.2, the alternative installation methods of Section 1707.4.1, Section 1707.4.2, and Section 1707.4.3 shall be allowable.

1707.4.1 Omitted lateral brace. Where existing conditions prevent installation of lateral braces in accordance with Section 1707.2, lateral braces shall be permitted to be omitted for Retrofit Configurations A and B as defined in Table 1704.1 provided all of the following conditions are met. This method is not allowed for Retrofit Configurations C or D.

1. Lateral braces on each side of omitted lateral braces shall be 2x4 lumber placed approximately perpendicular to the attic-framing members and installed with their wide faces across attic-framing members. They shall be attached to a minimum of four (4) attic-framing members with attachment to the attic-framing member farthest from the gable end wall a minimum of 8 feet from the exterior sheathing or siding on the gable end wall.

2. The lateral brace on each side of an omitted lateral brace shall be fastened to each attic-framing member that they cross using three (3) 3-inch long fasteners. Fasteners shall be spaced a minimum of ½ inch from the edges of the lateral braces, a minimum of 2-3/4 inches from ends of lateral braces, and a minimum of 1 inch from adjacent fasteners.

3. A retrofit stud shall be installed in accordance with Section 1706.4 at the location of the omitted lateral brace. This retrofit stud and both of the retrofit studs on either side of the omitted lateral brace shall be sized in accordance with Table 1704.1 for the largest of the retrofit studs required at any of the three locations.

4. All three retrofit studs shall have their attic interior edges aligned such that they snuggly butt the strong back to be installed between the two lateral braces on either side of the omitted lateral brace.

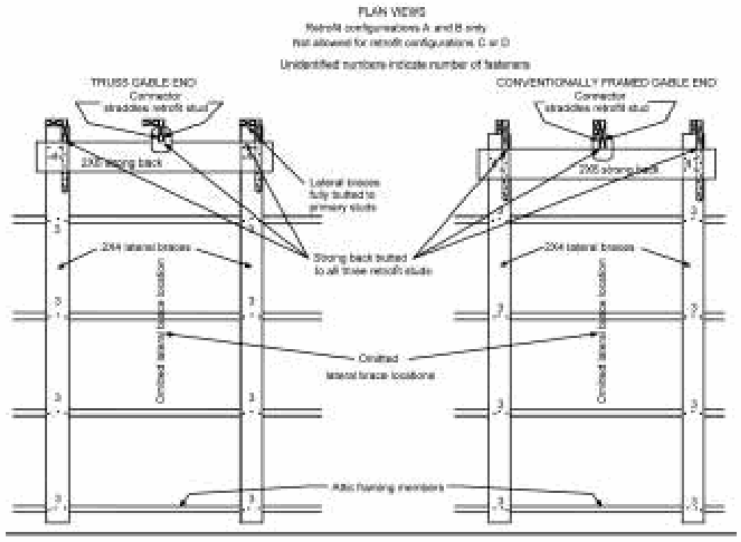
5. Retrofit studs adjacent to the omitted lateral brace shall be fastened to their corresponding lateral brace using straps in accordance with the L-bent strap method of Section 1708.1.1 except that a compression block is not required. The U-bent strap method of Section 1708.1.2 is not allowed unless U-bent straps are routed around the exterior face of primary studs.

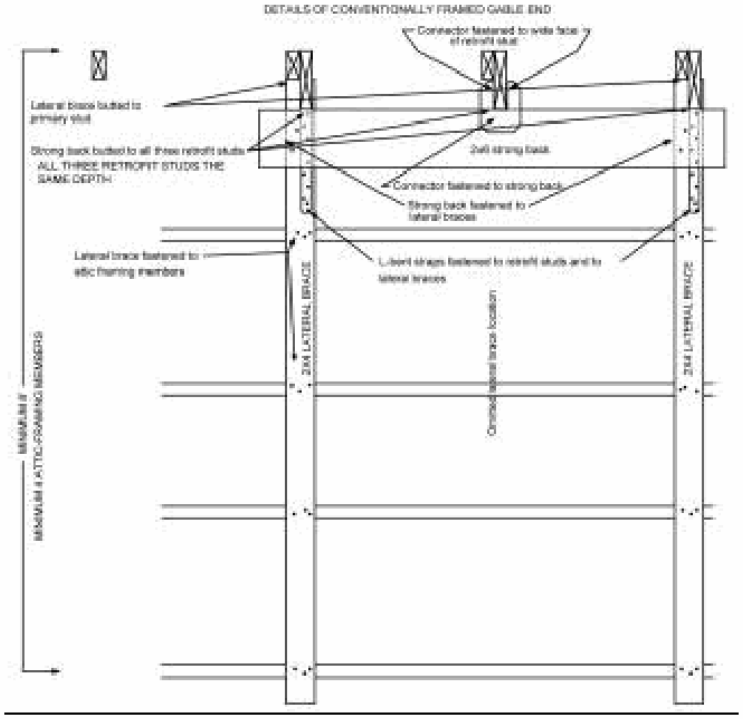
6. A strong back of minimum 2x6 lumber shall be installed parallel to the gable end and shall be located on and span between the lateral braces on the two sides of the omitted lateral brace. The strong back shall extend a minimum of 2-3/4 inches beyond the outer edges of the lateral braces and be snuggly butted against each of the three retrofit studs. The strong back shall be attached to each of the lateral braces on which it rests with four (4) 3-inch fasteners. The fasteners shall be placed a minimum 1/2 inch from all edges, a minimum of 2 inch spacing between fasteners, and a minimum of 2-3/4 inches from ends of the lumber members.

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7. The retrofit stud at the location of the omitted lateral braces shall be fastened to the strong back using an connector with minimum uplift capacity of 800 pounds as specified by the manufacturer for use with spruce-pine-fir or hem-fir lumber and installed such that this capacity is oriented in the direction perpendicular to the gable end wall.

8. Lateral braces at ends of strong backs shall be permitted to be interrupted in accordance with Section 1707.4.2; but shall not be permitted to be shortened using the alternative method of 1707.4.3.

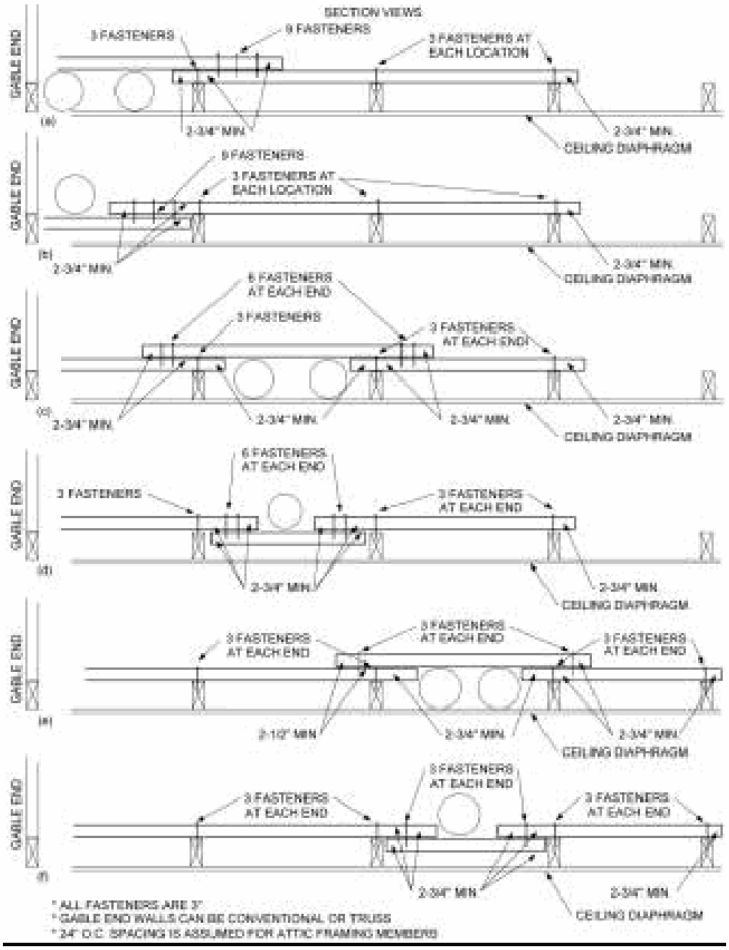




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FIGURE 1707.4.1
OMITTED LATERAL BRACE

1707.4.2 Interrupted lateral braces. Where existing conditions prevent the installation of lateral braces of required length in accordance with Section 1707.1, a splice member shall be permitted to be installed to bridge interruptions. Splice members shall be at minimum the same size lumber as the lateral braces they bridge. Although Figure 1707.4.2 illustrates the general methods that can be used where attic-framing members are spaced 24" o.c., the methods apply to other on center spacings. Splice members may extend beyond those shown and are allowed to be fastened to the main lateral brace segments farther than shown. Splice members shall be fastened at each end using the number of fasteners equal to the total number that would be required to be placed in total in that part of lateral braces more distant from the gable end wall. For a lateral brace that requires 3 fasteners at each roof framing members and installation across three roof framing members, the number of fasteners in the splice need not be more than nine fasteners if the interruption is between the gable end wall and the first attic-framing member; six fasteners if between the first and second framing members, and three fasteners if between subsequent interruptions. Fasteners shall be spaced 1/2 inch from the edges of lateral braces, 1 inch from each other, 1/2 inch from the edge of attic members, and minimum 2-3/4 inch from the ends of lateral braces and from the ends of splice members.



For SI: 1 inch = 25.4 mm

FIGURE 1707.4.2

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INTERRUPTED LATERAL BRACES

1707.4.3 Short lateral brace. Where conditions exist that prevent installation of lateral braces in accordance with Section 1707.4.1 or Section 1707.4.2, lateral braces shall be permitted to be shortened, except where the brace is adjacent to an omitted lateral brace of Section 1707.4.1, provided all of the following conditions are met.

1. The short lateral brace shall be installed across a minimum of two attic-framing members, be attached to an attic-framing member a minimum of 4 feet from the gable end wall. Where lateral braces are 2x4 they shall be fastened to each attic-framing member over which they cross with three (3) 3-inch fasteners. Where lateral braces are 2x6 or wider they shall be fastened to each attic-framing member over which they cross with four (4) 3-inch fasteners.

2. An anchor block shall be installed in each space between attic-framing members along the length of the lateral brace except for the space next to the gable end wall.

3. Anchor blocks shall be minimum 15/32 inch plywood, 7/16 inch OSB, or nominal 2 inch thick lumber #2 spruce-pine-fir or better.

4. Anchor blocks shall have minimum wide face dimension equal to the attic-framing members at the location where the anchor block is installed. Anchor blocks shall extend between attic-framing members and butt against them or their truss plates with a maximum gap of 1/8 inch.

5. Anchor blocks shall be installed on lateral braces with their wide face on the narrow face of lateral braces. Anchor blocks shall be placed on lateral braces with their attic interior edge flash with the attic interior face of lateral braces. They are permitted to be placed on different edges of lateral braces.

6. Anchor blocks shall be fastened to lateral braces with a single row of 8d common nail, 10d common nails or #9 screws with minimum penetration into lateral braces equal to the thickness of the anchor block or 1 inch whichever is greater. The minimum number of fastener shall be the maximum that can be placed in a single row with minimum 2-3/4 inch distance between fasteners and 2-3/4 inch distance to ends of anchor blocks except that the number of fasteners need not exceed seven per anchor block. For nominal 2 inch thick lumber anchor blocks, the number of fasteners need not exceed three fasteners per anchor block.

1707.5 Lateral brace connections to webs of trusses. Where existing conditions prevent installation of lateral braces on top or bottom chords of trusses, they shall be permitted to be installed on diagonal webs or vertical members of trusses provided all of the following conditions are met.

1. Lateral braces shall be positioned as close to the ceiling or roof diaphragms as existing conditions permit without altering trusses or any of their components.

2. Anchor blocks shall be installed between each pair of attic-framing members along the length of the lateral brace except for the framing member space next to the gable end wall. Anchor blocks can be installed on the narrow or wide face of lateral braces.

3. Anchor blocks shall be minimum 15/32 inch plywood, 7/16 inch OSB, or nominal 2 inch thick #2 spruce-pine-fir lumber or better.

4. Anchor blocks shall be sized to extend towards the nearby ceiling or roof diaphragm to within 3-1/2 inches of the diaphragm. Anchor blocks shall butt against chords or diagonals or vertical webs of trusses or truss plates with a maximum gap of 1/8 inch.

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5. Anchor blocks shall be fastened to lateral braces with 8d common or 10d common nails or #9 screws with minimum penetration into lateral braces equal to the thickness of the anchor blocks or 1 inch whichever is greater. The minimum number of fastener shall be the maximum that can be placed in a row with a minimum 2-3/4 inch distance between fasteners and 2-3/4 inch distance to ends of anchor blocks except that the number need not exceed three fasteners for nominal 2 inch thick lumber anchor blocks.

1707.6 Installation at truss ridges. Where existing conditions prevent installation of lateral braces near the peak of roofs, ridge ties made of minimum 2x4 members shall be installed horizontally on faces of trusses to provide anchorage for a required lateral brace. The bottom surfaces of added ridge tie members shall be aligned so that they will support a continuous lateral brace and be installed a maximum of 4 inches below limiting existing conditions for any of the trusses used to support the lateral brace. Ridge ties shall be installed on a minimum of three trusses and on every truss member over which lateral braces pass and be attached to an attic-framing member at least 6 feet from the exterior sheathing or siding on the gable end wall. Ridge ties shall be placed on alternate sides of trusses. Ridge ties used to support lateral braces shall be fastened to each top chord member of each truss using two (2) 3-inch long fasteners and to any other truss members they cross using three (3) 3-inch long fasteners. Fasteners shall be spaced a minimum ½ inch from edges of all members and minimum of 1 inch from each other. Lateral braces shall be attached to ridge ties as required by Section 1707.3.1.

1707.8 Piggyback trusses. Piggyback truss assemblies, trusses composed of two trusses one above the other, shall be retrofitted such that a single continuous retrofit stud is installed and fastened to the primary studs of both the lower and upper truss. Primary studs shall be placed and fastened in accordance with Section 1705. The bottom chord of the upper truss shall be connected to the retrofit stud using a connector with minimum 175 pound uplift capacity.

1707.9 Outlookers. Where outlookers exist to support a gable roof overhang, the out lookers shall be attached to the gable end truss or rafter using a connector with a minimum 175 pound uplift capacity. Where the end of the out looker butts against an interior truss or rafter, the end shall be connected to the truss or rafter using a joist hanger or U shaped metal connector with a minimum capacity of 175 pounds.

SECTION 1708
ATTACHMENT OF LATERAL BRACES TO RETROFIT STUDS

1708.1 Attachment of lateral braces to retrofit studs. The top and bottom of each retrofit stud shall be attached to a lateral brace with a minimum 1-1/4 inch wide *approved* flat or coil metal straps with pre-punched holes for 10d common or 16d common nails or #9 screws. No attachment is required for the retrofit stud located at an omitted lateral brace location where connectors are in place in accordance with Section 1707.4.1. Straps shall be fastened using the size and number of fasteners in accordance with Table 1704.1. For use of L-bent straps, attachment shall comply with the method of Section 1708.1.1 and for use of U-bent straps with the method of Section 1708.1.2. Either method is allowable at either end of a retrofit stud.

1708.1.1 L-bent strap method. For Configurations A, B, and C, retrofit studs shall be attached to lateral braces in accordance with Figure 1708.1.1 and Figure 1707.1(1) or 1707.1(2). For Configuation D, retrofit studs shall be attached to lateral braces in accordance with Figure 1708.1.2 and Figure 1707.1(1) or Figure 1707.1(2). Attachments shall comply with the following conditions except where attachments of retrofit studs at omitted lateral braces are in conformance with Section 1707.4.1.

1. A strap of the gage specified in Table 1704.1 shall be installed to the retrofit stud and lateral brace such that one end of the strap is applied vertically to the retrofit stud on its vertical narrow face nearest the exterior of the gable end wall, bent 90 degrees, and applied horizontally to the wide horizontal face of the lateral brace.

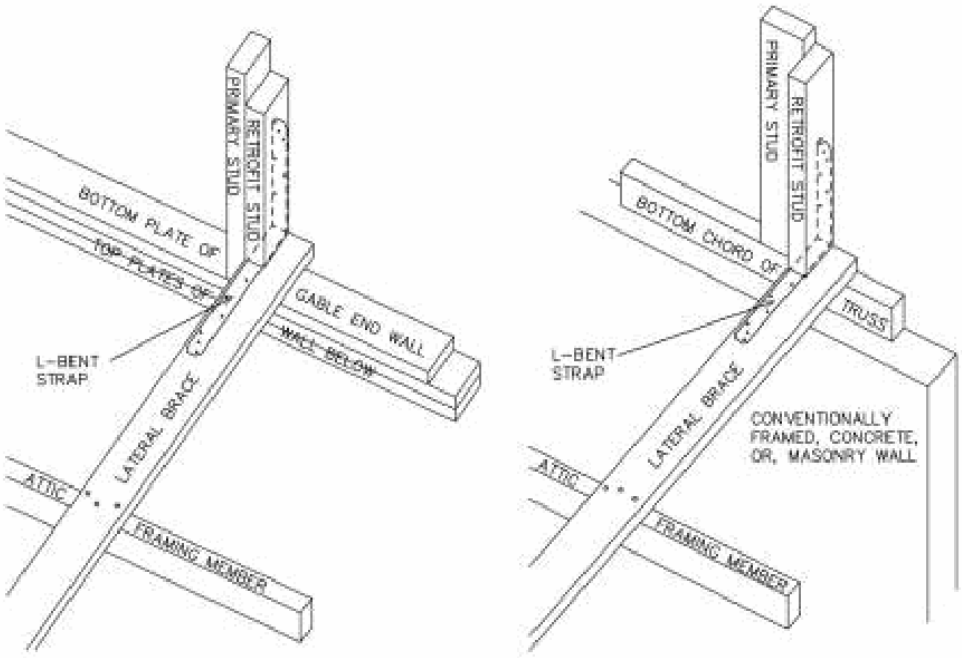
2. Straps shall be long enough and bent appropriately so that the number of fasteners required by Table 1704.1 can be installed while maintaining a minimum distance of 2-3/4 inches from fasteners to the end of retrofit studs and long enough to clear the retrofit stud end butting the lateral brace.

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3. Straps shall be permitted to be twisted or bent where they transition between the tops of retrofit studs and lateral braces to follow roof pitch. Straps shall be bent only once at a given location though it is permissible that they be bent or twisted at multiple locations along their length. The right angle bend of straps over the ends of retrofit studs shall be crisp.

4. Compression blocks shall be placed on the lateral braces and butted directly against the primary stud or the retrofit stud. Figure 1706.2.1(1) (trusses) and Figure 1706.2.1(2) (conventionally framed) show the placement of a compression block against the existing stud. The minimum contact area between compression blocks and primary or retrofit studs shall be an area equivalent to 1-1/2 inches by 1-1/2 inches (2.25 square inches). Angled contact is permissible. Compression blocks shall be allowed to be placed over straps or beside straps.

5. Compression blocks shall be fastened to lateral braces using the number of 3-inch fasteners required by Table 1704.1. Fasteners shall be placed such they are a minimum 2-3/4 inches from the ends of compression blocks, a minimum 2-3/4 inches from each other along the length of compression blocks, and a minimum ½ inch from edges of both compression blocks and lateral braces. Fasteners securing compression blocks are allowed to penetrate straps.



Conventionally framed gable end wall — Truss framed gabled end wall

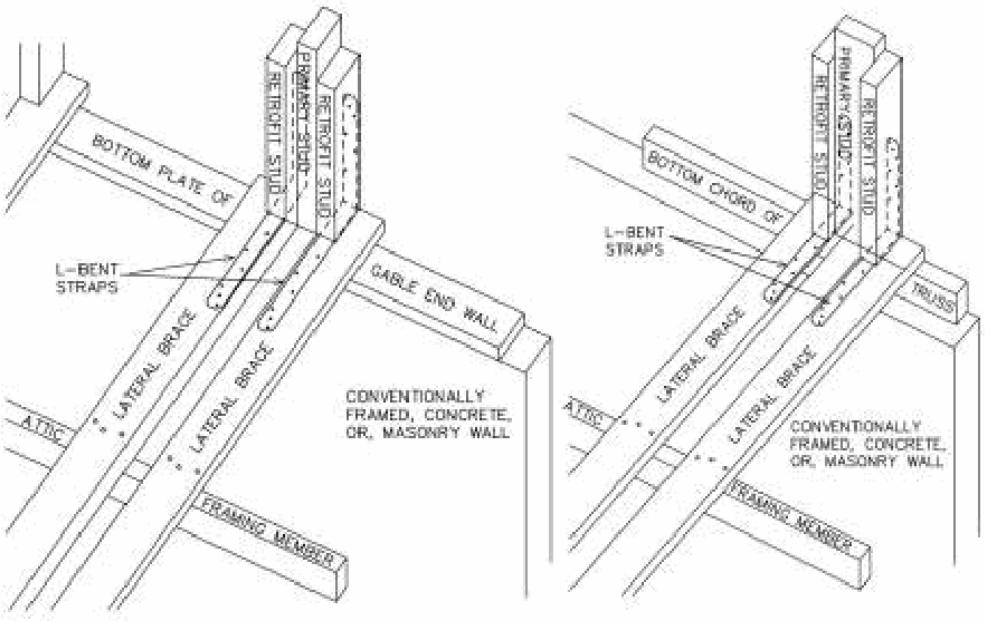
Compression blocks are not shown for clarity. Views are from within the attic.

FIGURE 1708.1.1(1)
L-BENT STRAP METHOD FOR CONFIGURATIONS A, B, AND C

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S5888 Text Modification

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Conventionally framed gable end wall Truss framed gabled end wall

Compression blocks are not shown for clarity. Views are from within the attic.

FIGURE 1708.1.1(2)
L-BENT STRAP METHOD FOR CONFIGURATION D

1708.1.2 U-bent strap method. For Configurations A, B, and C, retrofit studs shall be attached to lateral braces in accordance with Figure 1708.1.2 and Figure 1707.1(3) or 1707.1(4). For Configuration D, retrofit studs shall be attached to lateral braces in accordance with Figure 1708.1.3 and Figure 1707.1(3) or Figure 1707.1(4). Attachments shall comply with the following conditions except where attachments of retrofit studs at omitted lateral braces are in conformance with Section 1707.4.1.

1. A strap of the gage specified in Table 1704.1 shall be wrapped around the back edge of the retrofit or primary stud and extended onto the two narrow edges of the lateral brace.

2. Lateral braces shall be placed such that one narrow face of the lateral brace is aligned with one wide face of the primary or retrofit stud and the strap shall be bent such that it is in contact with the narrow edge closest to the gable end wall of the primary or retrofit stud being wrapped.

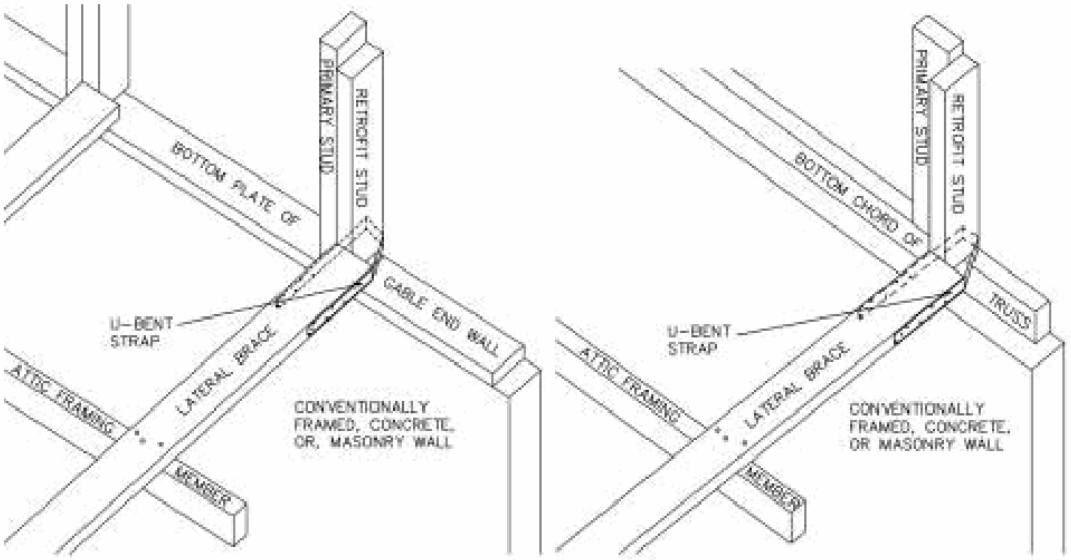
3. At the back of primary or retrofit studs, the two bends of straps shall be crisp.

4. Lateral braces shall butt snugly against the primary or retrofit stud with a maximum gap of ¼ inch.

5. Straps shall be attached to lateral braces using the number of 1-1/2 inch long fasteners specified in Table 1704.1. Fasteners for straps shall be placed minimum 2-3/4 inches from ends of lateral braces.

6. Straps shall be permitted to be twisted or bent where they transition between the tops of retrofit studs and lateral braces that follow roof pitch. Straps shall be bent only once at a given location though it is permissible that they be bent or twisted at multiple locations along their length.

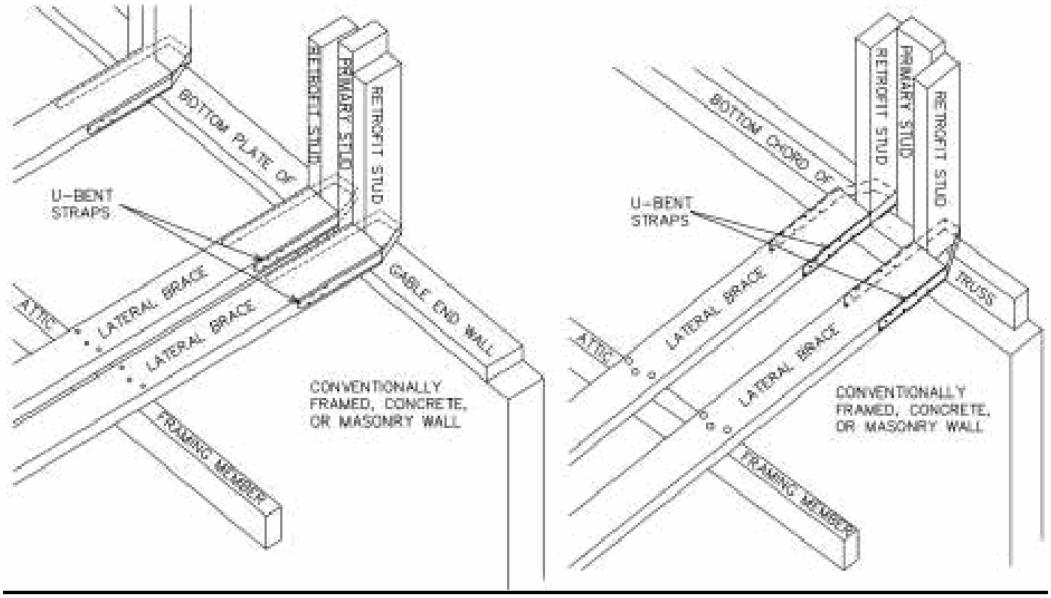
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Conventionally framed gable end wall Truss framed gable end wall

Views are from within the attic.

FIGURE 1708.1.2(1)
U-BENT STRAP METHOD FOR CONFIGURATIONS A, B, AND C



Conventionally framed gable end wall Truss framed gable end wall

FIGURE 1708.1.2(2)
U-BENT STRAP METHOD FOR CONFIGURATION D

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SECTION 1709
CONNECTIONS TO WALL BELOW

1709.1 Requirements. Along gable ends where primary studs are longer than 3 feet, gable end walls shall be connected to the wall below using the methods prescribed in Section 1709.1.

1709.1.1 Truss gable end wall. Truss gable end walls shall be attached to the wall below using gusset angle brackets fastened to the bottom chord of roof trusses and to the wall below and spaced in accordance with Table 1704.1. Fasteners shall be placed a minimum of 5/8 inch from edges of lumber. Fasteners shall be permitted to penetrate truss plates. Four fasteners shall be effectively installed through each leg of gusset angles.

Exception: Where existing conditions prevent effective installation of all four fasteners into each leg of a gusset angle bracket, a supplementary gusset angle bracket shall be installed a minimum of 2-3/4 inches from and a maximum of 8 inches from the one without the four fasteners in each leg. The number of effectively installed fasteners securing the corresponding leg of the supplementary gusset angle bracket shall at least equal the number not effectively installed on the first gusset angle bracket.

1709.1.1.1 Wood Frame Wall Below. Where the wall below a gable end is a wood frame wall, a gusset angle bracket specified by the manufacturer for lumber-to-lumber applications shall be installed using fasteners of the same type supplied / specified by the manufacturer. Fasteners installed in top plates shall extend through the full depth of the lowest top plate.

1709.1.1.2 Concrete or Masonry Wall Below. Where the wall below a gable end wall is a concrete or masonry wall, connections shall be by one of the following methods.

2.1 Where the wall below does not have a sill plate on top of the bond beam, a gusset angle bracket specified by the manufacturer for lumber-to-concrete or lumber-to-masonry applications shall be installed directly to the concrete or masonry of the wall below and to the bottom chord of the truss.

2.2 Where there is a sill plate of any thickness on top of the bond beam a gusset angle bracket specified by the manufacturer for lumber-to-concrete or lumber-to-masonry applications shall be installed on the sill plate with fasteners passing vertically through the gusset angle bracket and sill plate and connecting directly into the concrete or masonry wall below. Fasteners of the same diameter and style supplied / specified by the gusset manufacturer shall be installed that have sufficient length to penetrate the sill plate and embed into the concrete or masonry to the same depth provided by the fasteners supplied / specified by the gusset angle bracket manufacturer for installation directly into concrete.

2.3 Where there is a sill plate on top of the bond beam that is a minimum 1-1/2 inches thick, a gusset angle bracket specified by the manufacturer for lumber-to-lumber applications shall be fastened to the sill plate. Gusset angle brackets shall be fastened to the sill plate using 4 each 1-1/2 inch long fasteners of the same type supplied / specified by the gusset angle manufacturer for wood connections. Regardless of how well the sill plate may be attached to the wall, it shall be anchored to the wall below on each side of the gusset angle bracket using concrete screws of the same type and size and number as those as those supplied / specified by the gusset manufacturer for concrete or masonry connections. They shall be embedded into the concrete or masonry to the same depth intended for the fasteners supplied / specified by the manufacturer of gusset angles installed in concrete. Washers of minimum 3/8 inch diameter shall be placed under heads of those fasteners. Fasteners shall be placed a minimum of 2-3/4 inches and a maximum of 8 inches from the required gusset angle bracket.

1709.1.2 Platform framed gable end wall. Conventionally framed gable end walls shall be attached to the wall below in accordance with one of the following methods.

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1709.1.2.1 Stud connections. The bottom end of each primary stud of gable end walls shall be connected to bottom members using one of the following methods.

1. Where a sill plate for the gable end wall exists, the bottom end of each primary stud shall be connected to the sill plate using a stud-to-plate metal connector with minimum uplift capacity of 175 pounds.

2. Where a wood frame gable end wall has a ceiling joist as the lowest outer member of the gable end wall, the primary studs shall be connected to the joist using a stud-to-plate metal connector with minimum uplift capacity of 175 pounds positioned on the wide face of the joist near the top of the joist so that it extends up the stud where the stud is full width.

1709.1.2.2 Wall connections. The gable end walls shall be connected to the wall below using one of the following methods.

1. Where there is a wood frame wall below a gable end wall and where the gable end wall above has a sill or bottom plate atop the plates of the wall below, the sill of the gable end wall shall be connected to the top plates of the wall below using minimum 5/8 inch diameter lag bolt of sufficient length to penetrate through the lower top plate of the wall below. Lag bolts shall be placed minimum 1-5/8 inches from edges of lumber. The lag bolts shall be installed at the spacing indicated in Table 1704.1.

2. Where a wood frame gable end wall has a ceiling joist as the lowest outer member of the gable end wall, that joist shall be connected to the wall below using the method Section 1709.1.1(1) or 1709.1.1 except read 'ceiling joist' for 'bottom chord of roof truss'.

3. Where the wall below a gable end wall is a concrete or masonry wall, the sill or bottom plate of the gable end wall shall be connected to the wall below using ¼ inch diameter concrete or masonry screws of the same type used for gusset angles and of sufficient length to provide a minimum embedment of 1-1/2" into the concrete of the wall or a minimum 2-3/4 inches into the masonry of the wall. A washer sized for the diameter of the lag bolt or wood screw shall be placed under the head of each lag bolt. The fasteners shall be installed at the spacing indicated in Table 1704.1.

1709.1.3 Balloon framed gable end wall. The retrofits presented in this chapter are specifically intended for platform framed gable end walls.

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S5222

Date Submitted	7/17/2012	**Section**	301.15	**Proponent**	Ann Stanton
Chapter	3	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Repropose Florida-specific wind resistance equipment criteria.

Rationale

Proposed language is currently in the 2010 Florida Building Code. It is needed to ensure that HVAC equipment that is exposed to wind during storms is designed to meet those wind speeds.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Proposed language is currently in the 2010 Florida Building Code.

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

None. Proposed language is currently in the 2010 Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. Proposed language is currently in the 2010 Florida Building Code.

Requirements

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

Yes. Proposed language is currently in the 2010 Florida Building Code.

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

Yes. Proposed language is currently in the 2010 Florida Building Code.

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

No. Proposed language is currently in the 2010 Florida Building Code.

Does not degrade the effectiveness of the code

No. Proposed language is currently in the 2010 Florida Building Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

Proposed language is currently in the 2010 Florida Building Code. Florida is often exposed to tropical storms and equipment on buildings should be prepared for them.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

Proponent Ken Cureton **Submitted** 9/21/2012 **Attachments** No

Comment:

The proposal provides for clarification with regard to wind resistance for mechanical equipment as per DCA07-DEC-182 and DCA07-DEC-183.

S5222-G1

General Comment - 08/09/2012 - 09/23/2012

S5222-G2

Proponent BOAF CDC **Submitted** 9/23/2012 **Attachments** No

Comment:

This code change is unnecessary as the provisions contained in the proposed amendment are adequately addressed in the applicable international code. Per FS 553.73 (7) (g)

The amendment does not demonstrate by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variations addressed by the foundation code. Per FS 553.73 (7) (g)

Section 301.15 Wind resistance. Change to read as shown.

301.15 Wind resistance. Mechanical equipment, appliances and supports that are exposed to wind shall be designed and installed to resist the wind pressures on the equipment and the supports as determined in accordance with the Florida Building Code, Building. Roof-mounted mechanical units and supports shall be secured to the structure. The use of wood "sleepers" shall not be permitted.

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Date Submitted	7/26/2012	**Section**	202	**Proponent**	T Stafford
Chapter	2	**Affects HVHZ**	No	**Attachments**	No

General Comments No

Alternate Language No

Related Modifications

Summary of Modification

This proposal part of a serires of proposals that reinstate the ultimate wind speed maps in the FBCR. This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Rationale

This proposal part of a serires of proposals that reinstate the ultimate wind speed maps in the FBCR. This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

This is one of a series of proposals that will reinstate the entire wind provisions from the 2010 FBCR. When the ICC adopted ASCE 7-10 into the I-codes, the decision was made to use a nominal (asd) version of the new maps in ASCE 7-10. This was due to a number of reasons. First, as ASCE 7-10 was being developed, the ICC reduced the number of code cycles between code editions to one. Additionally, the IRC contains a significant number of wind "triggers" throughout that apply primarily to regions of low wind speed. Due to insufficient time to address all these triggers, a nominal version of the strength design-level maps in ASCE 7-10 was adopted in the IRC. While technically correct, having different wind speed maps for commercial and residential structures within the same jurisdiction has resulted in much confusion.

In the State of Florida, the prescriptive wind speed triggers are of little consequence since the prescriptive provisions of the IRC do not apply to the State of Florida. The 2010 FBCR and FBCB have consistent wind speed maps and are the same maps in ASCE 7-10. Additionally, it is anticipated that the IRC wind speed maps will be updated to be consistent with ASCE 7-10 and the 2012 IBC at some point in time, perhaps as early as the next IRC code development cycle.

It is also worth noting that the 2012 Edition of the AF&PA WFCM has been updated to be based on the strength design-level maps. Additionally, the ICC 600 committee has also chosen the use the strength design-level maps in the forthcoming update to that standard.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

WIND-BORNE DEBRIS REGION. Areas within hurricane-prone regions ~~as designated in accordance with Figure R302.1(4).~~ located:

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

2. In areas where the ultimate design wind speed V_{ult} is 140 mph (63 m/s) or greater.

WIND SPEED, V_{ult}. Ultimate design wind speeds (3-sec gust), miles per hour (mph) (km/hr) determined from Figure R301.2(4).

WIND SPEED, V_{asd}. Nominal design wind speeds (3-sec gust), miles per hour (mph) (km/hr) where applicable.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5678_TextOfModification_1.png

Date Submitted	7/31/2012	**Section**	202	**Proponent**	Joseph Belcher
Chapter	2	**Affects HVHZ**	No	**Attachments**	Yes

General Comments No

Alternate Language No

Related Modifications

None

Summary of Modification

Retains FBC definition of sunroom.

Rationale

The base code definition does not address the most common sunroom built in Florida. The definition Item 1 was modified to strike the reference to the energy chapter of the base code. The definition Item 2 was modified to clarify that the size criteria applies to open areas as well as areas with various glazed fenestration products.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impacts to local entity relative to enforcement of code as the provisions are currently in effect. No new requirements created.

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

No impacts to building and property owners as the provisions are currently in effect. No new requirements created.

Impact to industry relative to the cost of compliance with code

No impacts to industry as the provisions are currently in effect. No new requirements created.

Requirements

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

Retaining the definition affects the welfare of the general public by including the definition of the most common type sunroom structures built in Florida which will benefit the citizens of Florida.

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

Retaining the definition affects the welfare of the general public by including the definition of the most common type sunroom structures built in Florida which will benefit the citizens of Florida.

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

The proposed amendment does not discriminate.

Does not degrade the effectiveness of the code

Improves the effectiveness of the code by including the most common type of sunroom built in Florida in the definition for sunroom.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

SUNROOM.

1. A one-story structure attached to a ***dwelling*** with a ***glazing area*** in excess of 40 percent of the gross area of the structure's ***exterior walls*** and roof. ~~For definition applicable in Chapter 11, see Section N1101.9.~~

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

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5793_TextOfModification_1.png

The base code definition does not address the sunroom most commonly built in throughout Florida. The modified definition has been in the last three editions of the FBC and elimination of it would have a severely negative impact on the industry. The climate of Florida is not conducive to glass roofs on sunrooms.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5793_PQ2_Sunroom_Def_Geo_Data_IBC_IRC_1.png

S5793 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5793_PQ3_Sunroom_Def_Submitted_IBC_IRC_1.png

Date Submitted	8/1/2012	**Section**	308.1	**Proponent**	Jim Heise
Chapter	3	**Affects HVHZ**	No	**Attachments**	No

General Comments No

Alternate Language No

Related Modifications

Summary of Modification

Identification to maintain that laminated glass, when used for other than safety glazing, be permanantly identified

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

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

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

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

Carried over from the previous code. Field tested and proven to be effective.

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

This will improve the code by reinstating these standards that exist in the Florida Code with the current edition.

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R308.1 Identification. Each pane shall bear the manufacturer's label designating the type and thickness of glass or glazing material. Except as indicated in Section R308.1.1 each pane of glazing installed in hazardous locations as defined in Section R308.4 shall be provided with a manufacturer's or installer's label, ~~designation specifying who applied the designation,~~ designating the type of glass and the safety glazing standard with which it complies, which is visible in the final installation. The ~~designation~~ safety glazing label shall be acid etched, sandblasted, ceramic-fired, laser etched, embossed, or be of a type which once applied cannot be removed without being destroyed. ~~A label shall be permitted in lieu of the manufacturer's designation.~~ Laminated glass, other than used for safety glazing, shall be permanently identified as per this section, designating laminator, overall glass thickness and trade name of interlayer.

Exceptions:

1. For other than tempered glass, manufacturer's designations are not required provided the building official approves the use of a certificate, affidavit or other evidence furnished by the gazing contractor certifying that each light id glazed in acordance with approved construction documents that comply with the provisions of this chapter confirming compliance with this code.
2. Tempered spandrel glass is permitted to be identified by the manufacturer with a removable paper ~~designation~~ label

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5822_TextOfModification_1.png

Date Submitted	7/25/2012	**Section**	R301.1.1	**Proponent**	Dwight Wilkes
Chapter	3	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

To recognize the standard for aluminum design as an alternative provision and provide the current edition AAMA 2100-10 . American Architectural Manufacturers Association (AAMA) National Patio Enclosure Association (NPEA) & National Sunroom Association (NSA) 2100 – Specification for Sunrooms.

Rationale

Updating an existing standard recognized in the 2010 FRC as an alternative provision.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

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

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

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

Helps protect the health and welfare of the public for these products to remain in the base code.

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

This will improve the code by reinstating this standard that exist in the Florida Code with the current edition.

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

This modification does not discriminate as it allows the use of any product that shows proof of meeting the code established standards.

Does not degrade the effectiveness of the code

Does not degrade the code as this standard is in the 2010 FRC.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

R301.1.1

Alternative provisions.

As an alternative to the requirements in Section R301.1 the following standards are

permitted subject to the limitations of this code and the limitations therein. Where engineered design is used inconjunction with these standards, the design shall comply with the ~~International~~ Florida Building Code – Building.

1. AF&PA - Wood Frame Construction Manual (WFCM).

2. AISI Standard for Cold-Formed Steel Framing—Prescriptive Method for One- and Two-Family Dwellings (AISI S230).

3. ICC Standard on the Design and Construction of Log Structures (ICC 400).

4. American Architectural Manufacturers Association (AAMA) National Patio

Enclosure Association (NPEA) & National Sunroom Association (NSA) 2100 – Specification for Sunrooms.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5651_TextOfModification_1.png

R301.1.1
Alternative provisions.
As an alternative to the requirements in Section R301.1 the following standards are permitted subject to the limitations of this code and the limitations therein. Where engineered design is used inconjunction with these standards, the design shall comply with the ~~International~~ Florida Building Code – Building.
1. AF&PA - *Wood Frame Construction Manual* (WFCM).
2. AISI Standard for Cold-Formed Steel Framing—Prescriptive Method for One- and Two-Family Dwellings (AISI S230).
3. ICC Standard on the Design and Construction of Log Structures (ICC 400).
4. American Architectural Manufacturers Association (AAMA) National Patio Enclosure Association (NPEA) & National Sunroom Association (NSA) 2100 – *Specification for Sunrooms.*

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5651_Text_R301.1.1 Alternative provisions IRC_1.png

Date Submitted	7/30/2012	**Section**	R301.2.1.1.1	**Proponent**	Joseph Belcher
Chapter	3	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Brings forward language adopting AAF Guide to Aluminum Construciton in High Wind Areas; Adds language pemitting design per FBCB.

Rationale

Brings forward the reference to the AAF Guide to Aluminum Structures in High Wind Areas, a prescriptive document adopted since the FBC 2001. In addition, the section is modified to provide a reference to the Florida Building Code, Building, provisions of Chapter 20.

The base code does not adequately address this unique structure so commonly found in Florida. Some design provisions taken from the FBCB asre found in Appendix H of the base code, but there are no prescriptive requirements within the code. The aluminum screen enclosure industry began in Florida and is spreading to other states with temperate climates. The provisions have been rejected by the ICC code change committees in the past.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The change will have no impact on the cost of compliance relative to the enforcement of the code since the provisions have been in effect since the 2001 FBC.

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

: No impacts since the provisions have been in effect since the 2001 FBC.

Impact to industry relative to the cost of compliance with code

No impacts since the provisions have been in effect since the 2001 FBC.

Requirements

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

The proposal has a reasonable and substantial connection with the welfare of the general public by providing design criteria for a very popular type construction in Florida. Use of the Guide will assure code compliance thereby enhancing the health, safety, and welfare of the public.

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

The proposal strengthens and improves the code by providing prescriptive criteria for a very common type construction found in Florida.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code by providing prescriptive criteria for construction of a very common type construction found in Florida.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

Appendix H adopts some of the provisions, but does not provide a prescriptive method for construction.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

R301.2.1.1.1 Aluminum Structure Design.

The AAF Guide to Aluminum Construction in High-Wind Areas shall be permitted for the construction of the aluminum structures therein addressed. Screen enclosures shall be permitted to be designed in accordance with the Florida Building Code Section 2002. Vinyl and acrylic panels shall be permitted and shall be removable. Removable panels shall be identified as removable by a decal. The identification decal shall essentially state: "Removable panel SHALL be removed when wind speeds exceed 75 mph (34 m/s)." Decals shall be placed such that the decal is visible when the panel is installed.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5790_TextOfModification_1.png

The base code definition does not address screen enclosures adequately and they are a common structure throughout Florida. The provisions are the result of scientific investigation specifically geared toward developing criteria for the construction of wind resistant screen enclosures. The fact that there are so many screen enclosures constructed in Florida and that the entire state is a hurricane prone region merits Florida specific provisions for the design of such structures.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5790_PQ2_ScreenEnc_Struct_Geo_Data_IBC_IRC_1.png

S5790 Prior Code Version question. submitted or attempted to be included

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

The provisions were submitted in the past and rejected in the International Building Code. A number of the provisions have been adopted as an appendix in the International Residential Code Appendix H. The Commission does not adopt appendices.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5790_PQ3_ScreenEnc_Submitted_IBC_IRC_1.png

Date Submitted	7/30/2012	**Section**	R301.2.1.1.2	**Proponent**	Joseph Belcher
Chapter	3	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Carries forward adoption of AAMA 2100; Carries forward and updates sunroom categories.

Rationale

The proposal brings forward the design criteria and categories of sunrooms which are not addressed in the base code. (AAMA 2100 adopted FBC 2004; AAMA Categories placed in FBC 2007) The sunroom categories are updated to the updated AAMA 2100-11. Originally, design criteria for sunrooms was provided. The industry encountered difficulties with widely varying interpretations regarding habitable versus non-habitable sunrooms among jurisdictions. Some jurisdictions claimed the categories of the standard conflicted with the building code and that the code classified sunrooms as habitable. Although there is (and was) nothing in the code stating a sunroom is a habitable space, there is a Declaratory Statement stating sunrooms can be designed as non-habitable spaces. (DCA05-DEC-235).To deal with these issues the industry proposed placing the sunroom categories contained in the adopted standard directly into the code. Inclusion of the AAMA Sunroom Categories within the code has almost totally eliminated the problem of improper classification.

Due to abuses by some, such as adding air conditioning to a sunroom after the final inspection and C of O, some jurisdictions required all sunrooms to meet the provisions for habitable spaces. The result was an unnecessary financial burden on the consumer that simply wanted an non-conditioned space providing shelter from the elements for recreational use. To assist jurisdictions in citing after the fact violations, the language requiring the categorization of the sunroom at the time of permit application was included. This proposal is intended to preserve all that work to benefit enforcement, the public, and the industry.

The base code does not adequately address sunroom construction in the body of the code. The National Sunroom Association has been successful in getting many of the Florida provisions included in Appendix H of the base code, but have not been successful in getting the provisions into the body of the code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The change will have no impact on the cost of compliance relative to the enforcement of the code since the provisions have been in effect for a number of years.

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

No impacts since the provisions are currently and have been in effect for a number of years.

Impact to industry relative to the cost of compliance with code

No impacts since the provisions are currently and have been in effect for a number of years.

Requirements

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

The proposal retains design criteria and the categories for sunrooms. The property owner or another responsible party will categorize the sunroom at permit application providing the public reasonable alternates for constructing sunrooms.

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

The proposal strengthens the code by adding language from an adopted standard for clarification and thereby assisting in interpretation of the code.

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

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code by providing clarifying language to assist in the correct interpretation of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

A number of the provisions are contained in an appendix of the base code. The Commission agreed not to adopt base code appendices early in the process.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

OTHER

Explanation of Choice

The National Sunroom Association has submitted some of the provisions, but have been successful only in getting the provisions in an appendix of the base code.

R301.2.1.1.2 Sunroom design.

R301.2.1.1.2.1 Sunrooms shall comply with AAMA/NPEA/NSA 2100.

R301.2.1.1.2.2 For the purpose of applying the criteria of the AAMA/NPEA/NSA 2100, sunrooms shall be categorized in one of the following categories by the permit applicant, design professional or the property owner where the sunroom is being constructed.

Category I: A Thermally Isolated Sunroom with walls that are either open or enclosed with insect screening or 0.5 mm (20 mil) maximum thickness plastic film. The space is defined as a non-habitable, non-conditioned sunroom.

Category II: A Thermally Isolated Sunroom with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The space is defined as a non-habitable, non-conditioned sunroom.

Category III: A Thermally Isolated Sunroom with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The sunroom fenestration complies with additional requirements for air infiltration resistance and water penetration resistance. The space is defined as a non-habitable, non-conditioned sunroom.

Category IV: A Thermally Isolated Sunroom with enclosed walls. The sunroom is designed to be heated and or cooled by a separate temperature control or system and is thermally isolated from the primary structure. The sunroom fenestration complies with additional requirements for air infiltration resistance, water penetration resistance, and thermal performance. The space is defined as a non-habitable and conditioned sunroom.

Category V: A Sunroom with enclosed walls. The sunroom is designed to be heated and or cooled and is open to the main structure. The sunroom fenestration complies with additional requirements for air infiltration resistance, water penetration resistance, and thermal performance. The space is defined as a habitable and conditioned sunroom.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5791_TextOfModification_1.png

The base code definition does not address the sunroom most commonly built in throughout Florida. The modified definition has been in the last three editions of the FBC and elimination of it would have a severely negative impact on the industry. The climate of Florida is not conducive to glass roofs on sunrooms.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5791_PQ2_Sunroom_Def_Geo_Data_IBC_IRC_1.png

Date Submitted	8/2/2012	**Section**	R301.2.1.1	**Proponent**	Joseph Belcher
Chapter	3	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

One of a series of Mods to retain prescriptive provisions for concrete masonry construction.

Summary of Modification

Retains MAF Guide to Concrete Masonry Residential Construction in High Wind Areas; Retains reference to prescriptive provisions of Chapter 6 for concrete masonry construction; Adds TMS 402/ACI 530/ASCE 5 and TMS 602/ACI 530.1/ASCE 6 as design option.

Rationale

The prescriptive document has been adopted by the code since the first edition. The reference to the prescriptive provisions for concrete masonry was first placed in the code in the 2004 FBCR. The base code is a prescriptive document with no prescriptive structural provisions that can be used in Florida. This change is part of a series of changes to provide prescriptive provisions for concrete masonry construction in the state.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

A. Impact to local entity relative to enforcement of code: No cost impacts as MAF document has been adopted since 2001 FBC and prescriptive provisions for masonry construction have been in code since 2004 FBC.

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

No cost impacts as MAF document has been adopted since 2001 FBC and prescriptive provisions for masonry construction have been in code since 2004 FBC. If a cost impact was assessed, it would be a reduction in cost for a registered designer.

Impact to industry relative to the cost of compliance with code

No cost impacts as MAF document has been adopted since 2001 FBC and prescriptive provisions for masonry construction have been in code since 2004 FBC. If a cost impact was assessed, it would be a reduction in cost for a registered designer.

Requirements

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

The changes related to prescriptive provisions for wind resistant concrete masonry dwellings improve the safety and welfare of the public by providing specific construction requirements suitable for the wind speeds of Florida.

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

The changes related to prescriptive provisions for wind resistant concrete masonry dwellings strengthen and improve the code by providing specific construction requirements suitable for the wind speeds of Florida.

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

The provisions do not discriminate

Does not degrade the effectiveness of the code

The changes related to prescriptive provisions for wind resistant concrete masonry dwellings strengthen and improve the code by providing specific construction requirements suitable for the wind speeds of Florida.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

S5998 Text Modification

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R301.2.1.1 Wind limitations and wind design required. The wind provisions of this code shall not apply to the design of buildings where wind design is

required in accordance with Figure R301.2(4)B or where the basic wind speed from Figure R301.2(4)A equals or exceeds 110 miles per hour (49 m/s).

Exceptions:

1. For concrete construction, the wind provisions of this code shall apply in accordance with the limitations of Sections R404 and R611.

2. For structural insulated panels, the wind provisions of this code shall apply in accordance with the limitations of Section R613.

In regions where wind design is required in accordance with Figure R301.2(4)B or where the basic wind speed shown on Figure R301.2(4)A equals or exceeds 110 miles per hour (49 m/s), the design of buildings for wind loads shall be in accordance with one or more of the following methods:

1. AF&PA *Wood Frame Construction Manual*

(WFCM); or 2. ICC *Standard for Residential Construction in*

High-Wind Regions (ICC 600); or

3. ASCE *Minimum Design Loads for Buildings and Other Structures* (ASCE 7); or

4. AISI *Standard for Cold-Formed Steel Framing—Prescriptive Method For One- and Two-Family Dwellings* (AISI S230); or

5. ~~*International*~~ *Florida Building Code.*

6. Concrete masonry construction shall be designed in accordance with the provisions of this code or in accordance with TMS 402/ACI 530/ASCE 5 and TMS 602/ACI 530.1/ASCE 6; or

7. The MAF Guide to Concrete Masonry Residential Construction in High Wind Areas shall be permitted for applicable concrete masonry buildings for a basic wind speed of 130 mph (58 m/s) or less in Exposure B and 110 mph (49 m/s) or less in Exposure C in accordance with Figure R301.2(4) as converted in accordance with R301.2.1.3.

The elements of design not addressed by the methods in Items 1 through ~~5~~ 7 shall be in accordance with the provisions of this code. When ASCE 7 or the ~~International~~ Florida Building Code is used for the design of the building, the wind speed map and exposure category requirements as specified in ASCE 7 and the ~~International~~ Florida Building Code shall be used.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5998_TextOfModification_1.png

S5998 Prior Code Version question. Evidence or Data

The geography of Florida places the state in wind speed zones not addressed by the International Residential Code (IRC). The IRC is intended to be a prescriptive code for residential construction. It contains no prescriptive provisions suitable for the wind speeds assigned to Florida. This modification is one of a series of changes intended to provide the prescriptive provisions to construct wind resistant concrete masonry residential structures and make the code useable for building such structures\.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5998_PQ2_Geo_Data_Prescriptive_Provisions_1.png

S5998 Prior Code Version question. submitted or attempted to be included

These provisions have been submitted to the International Residential Code Committee on two different occasions; once by myself on behalf of Florida's concrete industry and once by BOAF. They were rejected both times. The reason given by the maker of the motion to disapprove, a home builder from Louisiana were words to the effect that this was a local issue and did not belong in the code. A lot of work goes into preparing these code changes and to have them rejected out of hand for no good reason is not conducive to putting in the effort at the national level.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5998_PQ3_Submit_ICC_Prescriptive_Provisions_1.png

Date Submitted	7/19/2012	**Section**	R301.2.1	**Proponent**	Joseph Hetzel
Chapter	3	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Inclusion of a garage door wind load Table.

Rationale

Carries over the inclusion of a garage door wind load table from the 2010 code. Both Vult and (converted from Vult) Vasd wind speeds are shown in the Table, for convenience.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Continues improved efficiency in enforcing the code.

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

No adverse impact.

Impact to industry relative to the cost of compliance with code

No adverse impact.

Requirements

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

Contributes to public health, safety and welfare by clarifying garage door wind load requirements.

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

Preserves improvement of the code.

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

Revise Section R301.2.1 as follows:

R301.2.1 Wind design criteria.
Buildings and portions thereof shall be constructed in accordance with the wind provisions of this code using the basic wind speed in Table R301.2(1) as determined from Figure R301.2(4)A. The structural provisions of this code for wind loads are not permitted where wind design is required as specified in Section R301.2.1.1. Where different construction methods and structural materials are used for various portions of a building, the applicable requirements of this section for each portion shall apply. Where not otherwise specified, the wind loads listed in Table R301.2(2) adjusted for height and exposure using Table R301.2(3) shall be used to determine design load performance requirements for wall coverings, curtain walls, roof coverings, exterior windows, skylights~~, garage doors~~ and exterior doors (other than garage doors). Where loads for garage doors are not otherwise specified, the loads listed in Table R301.2(4) adjusted for height and exposure using Table R301.2(3) shall be used to determine design load performance requirements. Asphalt shingles shall be designed for wind speeds in accordance with Section R905.2.4. A continuous load path shall be provided to transmit the applicable uplift forces in Section R802.11.1 from the roof assembly to the foundation.

Add the following Table:

Table R301.2(4), Garage Door Loads For A Building With A Mean Roof Height of 30 Feet Located in Exposure B (PSF)

Roof Angle

>10 degrees

Vult AS DETERMINED IN ACCORDANCE WITH SECTION R301.2.1.3 (

Width (ft)	Height (ft)	100 MPH		110 MPH		120 MPH		130 MPH		140 MPH		150 MPH		160 MPH		17
9	7	9.6	-10.9	11.4	-12.9	13.7	-15.5	16.1	-18.2	18.5	-20.9	21.3	-24.1	24.3	-27.5	27
16	7	9.2	-10.3	10.9	-12.2	13.1	-14.6	15.5	-17.2	17.7	-19.7	20.4	-22.7	23.3	-26.0	26
		78 MPH		85 MPH		93 MPH		101 MPH		108 MPH		116 MPH		124 MPH		132 MPH	1

Vasd converted from Vult per Table R301.2.1.3

For SI: 1 foot = 304.8 mm, 1 mile per hour = 1.609 km/h, 1 psf = 47.88 N/m^2

1. For effective areas or wind speeds between those given above the load may be interpolated, otherwise use the load associated with the lower effective area.

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2. Table values shall be adjusted for height and exposure by multiplying by the adjustment coefficient in Table R301.2(3)

3. Plus and minus signs signify pressures acting toward and away from the building surfaces.

4. Negative pressures assume door has 2 feet of width in building's end zone.

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Date Submitted	7/26/2012	**Section**	R301.2.1	**Proponent**	T Stafford
Chapter	3	**Affects HVHZ**	No	**Attachments**	Yes

General Comments No

Alternate Language No

Related Modifications

Summary of Modification

This proposal part of a serires of proposals that reinstate the ultimate wind speed maps in the FBCR. This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Rationale

This proposal part of a series of proposals that reinstate the ultimate wind speed maps in the FBCR. This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

See uploaded support file for additional information and further clarification.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R301.2.1 Wind design criteria. Buildings and portions thereof shall be constructed in accordance with the wind provisions of this code using the basic wind speed in Table R301.2(1) as determined from Figure R301.2(4)~~A~~. ~~The structural provisions of this code for wind loads are not permitted where wind design is required as specified in Section R301.2.1.1.~~ Where different construction methods and structural materials are used for various portions of a building, the applicable requirements of this section for each portion shall apply. Where not otherwise specified, the wind loads listed in Table R301.2(2) adjusted for height and exposure using Table R301.2(3) shall be used to determine design load performance requirements for wall coverings, curtain walls, roof coverings, exterior windows, skylights, garage doors and exterior doors. Asphalt shingles shall be designed for wind speeds in accordance with Section R905.2.4. A continuous load path shall be provided to transmit the applicable uplift forces ~~in Section R802.11.1~~ from the roof assembly to the foundation.

R301.2.1.1 Wind limitations and wind design required. The wind provisions of this code shall not apply to the design of buildings where ~~wind design is required in accordance with Figure R301.2(4)B or where~~ the ~~basic~~ ultimate design wind speed, Vult, from Figure R301.2(4)~~A~~ equals or exceeds 115 ~~110~~ miles per hour (51 ~~49~~ m/s).

Exceptions:

1. For concrete construction, the wind provisions of this code shall apply in accordance with the limitations of Sections R404 and R611.

2. For structural insulated panels, the wind provisions of this code shall apply in accordance with the limitations of Section R613.

In regions where ~~wind design is required in accordance with Figure R301.2(4)B or where~~ the basic ultimate design wind speed, Vult, shown on Figure R301.2(4)~~A~~ equals or exceeds 115 ~~110~~ miles per hour (51 ~~49~~ m/s), the design of buildings for wind loads shall be in accordance with one or more of the following methods:

1. AF&PA Wood Frame Construction Manual (WFCM); or

2. ICC Standard for Residential Construction in High-Wind Regions (ICC 600); or

3. ASCE Minimum Design Loads for Buildings and Other Structures (ASCE 7); or

4. AISI Standard for Cold-Formed Steel Framing— Prescriptive Method For One- and Two-Family Dwellings (AISI S230); or

5. ~~International~~ Florida Building Code, Building.

The wind speeds in Figure R301.2(4) shall be converted to nominal wind speeds, V_{asd}, in accordance with Section R301.2.1.3 when the provisions of the standards referenced in 2 through 4 are used unless the wind provisions in the standards are based on Ultimate Wind Speeds as specified in Figure R301.2(4) or Chapter 26 of ASCE 7.

The elements of design not addressed by the methods in Items 1 through 5 shall be in accordance with the provisions of this code. ~~When ASCE 7 or the International Building Code is used for the design of the building, the wind speed map and exposure category requirements as specified in ASCE 7 and the International Building Code shall be used.~~

Delete Figures R301.2(4)A, R301.2(4)B, and R301.2(4)C.

~~FIGURE R301.2(4)A~~

~~BASIC WIND SPEEDS~~

~~FIGURE R301.2(4)B~~

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~~**REGIONS WHERE WIND DESIGN IS REQUIRED**~~

~~**FIGURE R301.2(4)C**~~

~~**WIND-BORNE DEBRIS REGIONS**~~

Insert Figure R301.2(4)

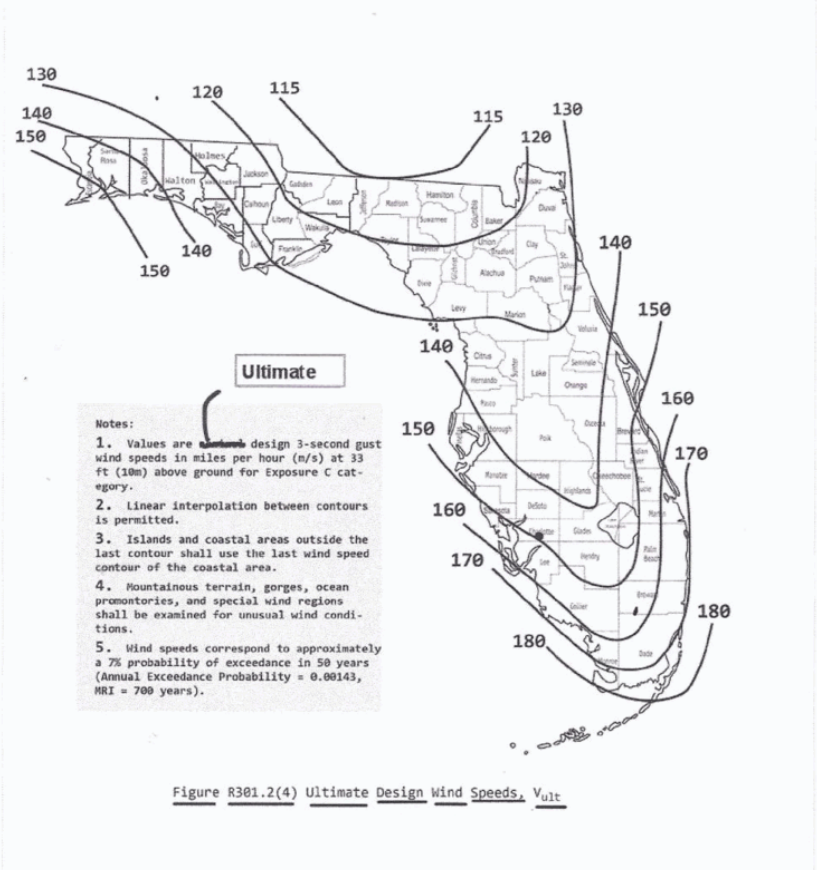


Figure R301.2(4) Ultimate Design Wind Speeds, V_{ult}

R301.2.1.2 Protection of openings. Exterior glazing in buildings located in windborne debris regions shall be protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E 1996 and ASTM E 1886 referenced therein. The applicable wind zones for establishing misile types in ASTM E 1996 are shown in Section R301.2.1.2.1 ~~on Figure R301.2(4)C~~. Garage door glazed opening protection for windborne debris shall meet the requirements of an approved impact-resisting standard or ANSI/DASMA 115.

Exception: Wood structural panels with a minimum thickness of 7/16 inch (11 mm) and a maximum span of 8 feet (2438 mm) shall be permitted for opening protection in one- and two-story buildings. Panels shall be precut and attached to the framing surrounding the opening containing the product with the glazed opening. Panels shall be predrilled as required for the anchorage method and shall be secured with the attachment hardware provided. Attachments shall be designed to resist the component and cladding loads determined in accordance with either Table R301.2(2) or ASCE 7, with the permanent corrosion-resistant attachment hardware provided and anchors permanently installed on the building. Attachment in accordance with Table R301.2.1.2 is permitted for buildings with a mean roof height of 33 feet (10 058 mm) or less where V_{asd} determined in accordance with Section R301.2.3, does not exceed 130 miles per hour (58 m/s) ~~located in Wind Zones 1 and 2 in accordance with Figure R301.2(4)C~~.

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R301.2.1.2.1 Modifications to ASTM E 1886 and ASTM E 1996. Section 6.2.2 of ASTM E 1996 shall be modified as follows:

6.2.2 Unless otherwise specified, select the wind zone based on the basic wind speed as follows:

6.2.2.1 Wind Zone 1 - 130 mph = basic wind speed < 140 mph, and Hawaii.

6.2.2.2 Wind Zone 2 - 140 mph = basic wind speed < 150 mph at greater than 1.6 km (one mile) from the coastline. The coastline shall be measured from the mean high water mark.

6.2.2.3 Wind Zone 3—150 mph (58 m/s) =basic wind speed =160 mph (63 m/s), or 140 mph (54 m/s) =basic wind speed =160 mph (63 m/s) and within 1.6 km (one mile) of the coastline. The coastline shall be measured from the mean high water mark.

6.2.2.4 Wind Zone 4—basic wind speed >160 mph (63 m/s).

R301.2.1.2.1.1 Modifications to ASTM E 1886 and ASTM E 1996.

Table 1 of ASTM E 1886 and ASTM E 1996 – add column and notes to read as follows:

Air Pressure Cycles

0.2 to 0.5 P_{pos}[1]

0.0 to 0.6 P_{pos}

0.5 to 0.8 P_{pos}

0.3 to 1.0 P_{pos}

0.3 to 1.0 P_{neg}[2]

0.5 to 0.8 P_{neg}

0.0 to 0.6 P_{neg}

0.2 to 0.5 P_{neg}

Notes:

1. P_{pos} = 0.6 x positive ultimate design load in accordance with ASCE 7.

2. P_{neg} = 0.6 x negative ultimate design load in accordance with ASCE 7.

R301.2.1.3 Wind speed conversion. When required ~~referenced documents are based on fastest mile wind speeds, the three second gust basic~~ ultimate design wind speeds, V_{ult}, ~~wind speeds, V3s,~~ of Figure R301.2(4) shall be converted to ~~fastest mile~~ nominal design wind speeds, V_{asd} ~~Vfm,~~ using Table R301.2.1.3. (4222)

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Anomaly

Delete existing Table R301.2.1.3 and replace with the following:

TABLE R301.2.1.3

WIND SPEED CONVERSIONS[abc]

V_{ult}	100	110	120	130	140	150	160	170	180	190	200
V_{asd}	78	85	93	101	108	116	124	132	139	147	155

a. Linear interpolation is permitted

b. V_{asd} = nominal design wind speed

c. V_{ult} = ultimate design wind speed determined from Figure R301.2(4).

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This proposal part of a series of proposals that reinstate the ultimate wind speed maps in the FBCR. This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

This is one of a series of proposals that will reinstate the entire wind provisions from the 2010 FBCR. When the ICC adopted ASCE 7-10 into the I-codes, the decision was made to use a nominal (asd) version of the new maps in ASCE 7-10. This was due to a number of reasons. First, as ASCE 7-10 was being developed, the ICC reduced the number of code cycles between code editions to one. Additionally, the IRC contains a significant number of wind "triggers" throughout that apply primarily to regions of low wind speed. Due to insufficient time to address all these triggers, a nominal version of the strength design-level maps in ASCE 7-10 was adopted in the IRC. While technically correct, having different wind speed maps for commercial and residential structures within the same jurisdiction has resulted in much confusion.

In the State of Florida, the prescriptive wind speed triggers are of little consequence since the prescriptive provisions of the IRC do not apply to the State of Florida. The 2010 FBCR and FBCB have consistent wind speed maps and are the same maps in ASCE 7-10. Additionally, it is anticipated that the IRC wind speed maps will be updated to be consistent with ASCE 7-10 and the 2012 IBC at some point in time, perhaps as early as the next IRC code development cycle.

It is also worth noting that the 2012 Edition of the AF&PA WFCM has been updated to be based on the strength design-level maps. Additionally, the ICC 600 committee has also chosen the use the strength design-level maps in the forthcoming update to that standard.

Finally, adopting the 2012 IRC without the amendments shown in this proposal will result in a significant reduction wind resistance design requirements for the State of Florida. Figure R301.2(4)B establishes the limit for which the prescriptive, non-engineered provisions of the IRC would be allowed. As shown, Figure R301.2(4)B would allow residential buildings about a third of the state to be built to the prescriptive, non-engineered provisions of the IRC. This is a significant departure from the 2010 FBCR as well as the 2001, 2004, and 2007 codes. This "anomaly" was recognized during the development of the 2012 IRC and is the result of tying prescriptive limits to a mapped wind speed value when those prescriptive limits do not necessarily calculate to a particular mapped wind speed value. The Wind Design Required Region of Figure R301.2(4)B of the 2012 IRC corresponds to the 130 mph contour for the Risk Category II map of ASCE 7-10. This aligns well geographically for most of the country except Florida, with the 100 - 110 mph limit from the older wind speed maps. Recognizing the Florida has a statewide code, and the fact that the state was a key playing in lowering the prescriptive limit in the 2004 FBCR and the 2006 IRC to 100 mph, it was anticipated that that Florida would maintain the levels

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of wind design consistent with the 2001, 2004, 2007, and the 2010 codes. Adopting this proposal achieves that level of consistency.

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S5217

Date Submitted	7/17/2012	**Section**	2115	**Proponent**	Suzanne Davis
Chapter	21	**Affects HVHZ**	No	**Attachments**	No
General Comments	No	**WITHDRAWN**			
Alternate Language	No				

Related Modifications

Summary of Modification

Sections 2115.1-2115.1.2 To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Rationale

To carry forward declaratory statement in accordance with the Commission Plan to implement the 2013 Code. Also to be consistent with the Florida Statutes.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Currently used under the 2010 Code, no new requirements being established

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

Currently used under the 2010 Code, no new requirements being established

Impact to industry relative to the cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Requirements

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

Does not degrade the effectiveness of the code

Carried over from the previous, field tested and proven to be effective

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

To carry forward declaratory statement in accordance with the Commission Plan to implement the 2013 Code. Also to be consistent with the Florida Statutes.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5217 Text Modification

Page: 1

Section 2115 Special Wind Provisions for Masonry.

2115.1 Gable endwalls. Add to read as shown.

2115.1 Gable endwalls.

2115.1.1 General. Add to read as shown.

2115.1.1 General. Gable endwalls shall be structurally continuous between points of lateral support.

2115.1.2 Cathedral endwalls. Add to read as shown.

2115.1.2 Cathedral endwalls. Gable endwalls adjacent to cathedral ceilings shall be structurally continuous from the uppermost floor to the ceiling diaphragm or to the roof diaphragm.

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S5218

Date Submitted	7/17/2012	**Section**	2212	**Proponent**	Suzanne Davis
Chapter	22	**Affects HVHZ**	No	**Attachments**	No
General Comments	No **WITHDRAWN**				
Alternate Language	No				

Related Modifications

Summary of Modification

Sections 2212.1 and 2212.2. To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Rationale

To carry forward declaratory statement in accordance with the Commission Plan to implement the 2013 Code. Also to be consistent with the Florida Statutes.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Currently used under the 2010 Code, no new requirements being established

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

Currently used under the 2010 Code, no new requirements being established

Impact to industry relative to the cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Requirements

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

Does not degrade the effectiveness of the code

Carried over from the previous, field tested and proven to be effective

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

To carry forward declaratory statement in accordance with the Commission Plan to implement the 2013 Code. Also to be consistent with the Florida Statutes.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2212.1 Gable end walls. Add to read as shown.

2212.1 Gable end walls. Gable endwalls shall be structurally continuous between points of lateral support.

2212.2 Catherdral end walls. Add to read as shown.

2212.2 Catherdral end walls. Gable endwalls adjacent to cathederal ceilings shall be continuous from the uppermost floor to ceilings shall be continuous from the uppermost floor to ceiling diaphragm or to the roof diaphragm.

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S5219

Date Submitted	7/17/2012	**Section**	2304	**Proponent**	Suzanne Davis
Chapter	23	**Affects HVHZ**	No	**Attachments**	No
General Comments	No **WITHDRAWN**				
Alternate Language	No				

Related Modifications

Summary of Modification

Sections 2304.3.4.1, 2304.3.4.2, 2304.3.4.3. To be consistent with the Florida Statutes and to implement the Commission plan to update the 2013 Code

Rationale

To carry forward declaratory statement in accordance with the Commission Plan to implement the 2013 Code. Also to be consistent with the Florida Statutes.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Currently used under the 2010 Code, no new requirements being established

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

Currently used under the 2010 Code, no new requirements being established

Impact to industry relative to the cost of compliance with code

Currently used under the 2010 Code, no new requirements being established

Requirements

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

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

Carried over from the previous, field tested and proven to be effective

Does not degrade the effectiveness of the code

Carried over from the previous, field tested and proven to be effective

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

To carry forward declaratory statement in accordance with the Commission Plan to implement the 2013 Code. Also to be consistent with the Florida Statutes.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

2304.3.4.1 General. Add to read as shown.

2304.3.4.1 General. Gable endwalls shall be structurally continuous between points of lateral support.

2304.3.4.2 Cathedral endwalls. Add to read as shown.

2304.3.4.2 Cathedral endwalls. Gable endwalls adjacent to cathedral ceilings shall be structurally continuous from the uppermost floor to the ceiling diaphragm or to the roof diaphragm.

2304.3.4.3 Full height studs. Add to read as shown.

2304.3.4.3 Full height studs. Full height studs may be sized using the bracing at a ceiling diaphragm for determining stud length requirements.

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Structural

Proposed Code Modifications

2013 Florida Building Code - Full Report

This document created by the Florida Department of Business and Professional Regulation - 850-487-1824

TAC: Structural

Sub Code: Residential

Total Mods for Structural: 66

S5721

Date Submitted	7/28/2012	**Section**	R301.2.1.2.1	**Proponent**	Joseph Belcher
Chapter	3	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Modifies ASTM E 1996 Wind Zone definitions to correlate with wind speeds of ASCE 7-10 and FBCR.

Rationale

See uploaded support file.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity relative to enforcement of code.

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

Will result in a reduction in cost to building and property owners in areas currently included in Wind Zone 4 that are not intended by ASTM to be included in Wind Zone 4.

Impact to industry relative to the cost of compliance with code

Reduction in costs as only products with approval for use in HVHZ have been designed and tested to meet the increased impact requirements and the offset criteria intended for Wind Zone 4.

Requirements

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

The proposed amendment properly correlates ASCE 7-10 with ASTM E 1996 within the Florida Building Code, Residential which has a reasonable connection with the health, safety, and welfare of the general public by not posing provisions greater than intended by the adopted reference standard.

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

The proposed amendment properly correlates the adoption of ASCE 7-10 with ASTM E 1996 within the Florida Building Code, Residential which strengthens and improves the by not posing provisions greater than intended by the adopted reference standard.

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

The proposed amendment does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities and possibly removes what some consider a discriminatory provision.

Does not degrade the effectiveness of the code

The proposed amendment properly correlates the adoption of ASCE 7-10 with ASTM E 1996 within the Florida Building Code, Residential which does not degrade the effectiveness of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R301.2.1.2.1 Modifications to ASTM E 1996. Section 6.2.2 of ASTM E 1996 shall be modified as follows:

6.2.2 Unless otherwise specified, select the wind zone based on the basic wind speed as follows:

6.2.2.1WindZone 1 - 130 mph < basic wind speed < 140 mph, and Hawaii.

6.2.2.2 Wind Zone 2 - 140 mph < basic wind speed < 150 mph at greater than 1.6 km (one mile) from the coastline. The coastline shall be measured from the mean high water mark.

6.2.2.3 Wind Zone 3 - 150 mph (58 m/s) < basic wind speed < 170 mph (63 m/s), or 140 mph (54 m/s) < basic wind speed < 170 mph (63 m/s) and within 1.6 km (one mile) of the coastline. The coastline shall be measured from the mean high water mark.

6.2.2.4 Wind Zone 4-basic wind speed > 170 mph (63 m/s).

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The State of Florida is the only of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection.

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The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

S5721 Prior Code Version question. submitted or attempted to be included

Page: 1

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1. I have spoken with the proponent of the change, Eric Stafford, P.E. Mr. Stafford states the intent of the change was to correlate the provisions of ASTM E 1996 and the ultimate wind speeds of ASCE 7-2010 within the code. There was no intention to expand Wind Zone 4 into new areas of the State. The correlating change does much more than correlate the code by expanding Wind Zone 4 provisions for impact resistive systems intended for Miami-Dade County into more areas of the State than intended by ASTM.

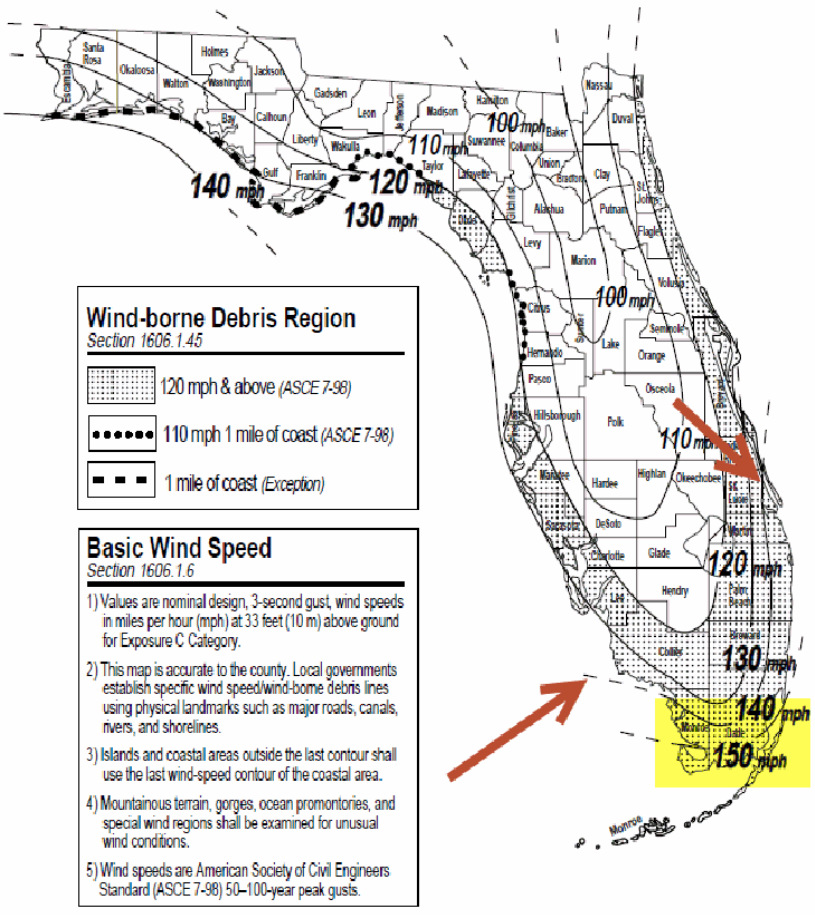
2. The creation of Wind Zone 4 within ASTM E 1996 first appeared in the 2002 Edition of ASTM E 1996 at the request of the Miami-Dade County representative on the ASTM Committee. The wind zone was intended to apply to Miami-Dade County and Monroe County and the map used by the ASTM committee was the map from the Florida Building Code; not ASCE 7. Broward County, although not in a greater than 140 mph wind speed area, indirectly adopted the wind zone throughout by accepting only products approved for use in the HVHZ which have to meet HVHZ Protocols, thereby incorporating the more stringent provisions for Wind Zone 4. In addition, the FBCB HVHZ provisions prohibit impact protective systems from contact with glass due to deformation. (FBCB §1626.2.6.1; §1626.3.6.1)

The Miami-Dade County (M-DC) standards (TAS 201 and 203) are more stringent than those of ASTM E 1996 for Wind Zones 1, 2, and 3 and ASTM E 1996 Wind Zone 4 was created to allow the use of ASTM E 1996 in Miami-Dade County. The problems with the economy prevented the continued participation by Miami-Dade County and as a result the task was not completed. Specific differences in Wind Zone 4 are the number of strikes during testing and the deflection criteria of the standard.

The M-DC test standards and ASTM E 1996, Wind Zone 4, require each specimen to withstand two strikes for the large missile test; ASTM E-1996 Wind Zones 1, 2, and 3 requires a single strike to each specimen. In addition, in Wind Zone 4 the standard calls for strikes directly on integral mullions and other intermediate members. The expansion of the requirements to other areas of the state adds cost to the products as well as to the testing of the products and goes well beyond the intent of the adopted standard.

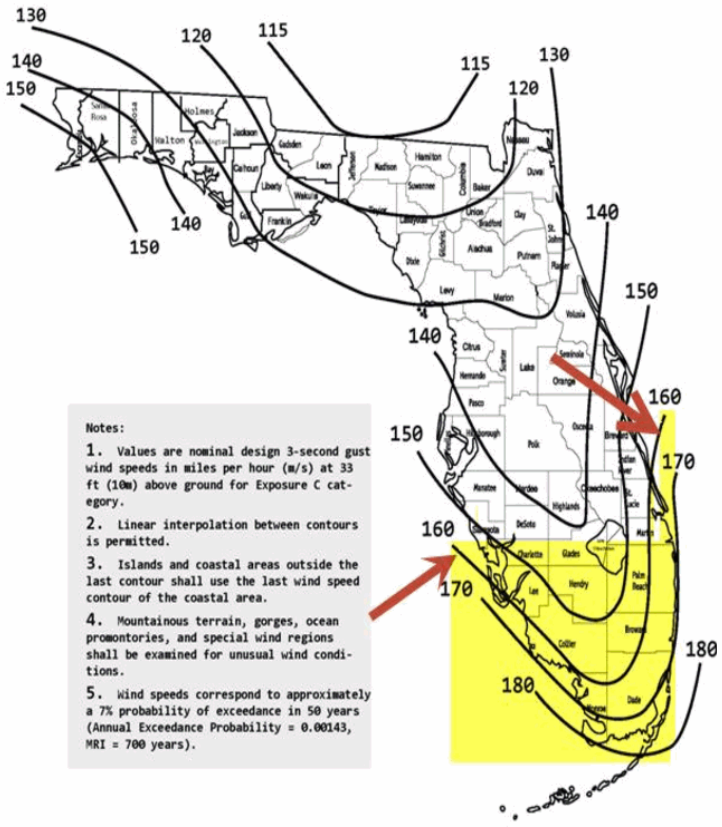
Even more disconcerting are the requirements related to the offset of the impact protective systems. In Wind Zone 4 all impact protective systems are required to comply with the greater of the maximum deflection measured in accordance with Section 5.5, plus 25%, or the sum of the maximum deflection and residual deflection, as measured at Section 5.5, plus 25%. (ASTM E 1996-2005) ASTM E 1996-2006 and 2009 modify the requirements to apply to all non-porous systems in Wind Zone 4 requiring an offset of the greater of the maximum dynamic deflection measured at Section 5.5, plus 2 mm, or the sum of the maximum deflection and residual deflection as measured at Section 5.5, plus 2 mm. (ASTM E 1996-2006 and 2009, §8.3) In the field these requirements result in an offset of from three inches to more than eight inches depending on the materials used in the impact protective system. The expansion of the requirements to other areas of the state adds cost to the products as well as to the testing of the products and goes well beyond the intent of the adopted standard.

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FBC 2007

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FBC 2010

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5721_Rationale_Wind_Zone_4_Mod_3.png

Date Submitted	7/25/2012	**Section**	R301.2.1.2	**Proponent**	Dwight Wilkes
Chapter	3	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

To recognize the standard editions for AAMA 506-06 or 08 or 11 Voluntary Specifications for Impact and Cycle Testing of Fenestration Products.

Rationale

adding an updated standard and existing standards recognized in the 2010 Florida Residential Code

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

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

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

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

Helps protect the health and welfare of the public by having products tested to this standard.

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

This will improve the code by reinstating these standards that exist in the Florida Code with the current edition.

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

This modification does not discriminate as it allows the use of any product that shows proof of meeting the code established standards.

Does not degrade the effectiveness of the code

Does not degrade the code as these standards are in the 2010 Florida Residential Code and update by including the current edition.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

Only the 08 edition is referenced in the 2012 IRC, this modification will bring in the 06 and 11 editions that are needed for Florida.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

OTHER

Explanation of Choice

AAMA 506-11 edition did not make the 2012 IRC timeline.

S5663 Text Modification

Page: 1

R 301.2.1.2 Protection of openings.

Exterior glazing in buildings located in windborne debris regions shall be protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E 1996 and ASTM E 1886 or TAS 201,202, and 203 or AAMA 506 referenced therein. The applicable wind zones for establishing missile types in ASTM E 1996 are shown on Figure R XXX. Garage door glazed opening protection for windborne debris shall meet the requirements of an approved impact-resisting standard or ANSI/DASMA 115."

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MODIFICATION TEXT:

R 301.2.1.2 Protection of openings.

Exterior glazing in buildings located in windborne debris regions shall be protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E 1996 and ASTM E 1886 or TAS 201,202, and 203 or AAMA 506 referenced therein. The applicable wind zones for establishing missile types in ASTM E 1996 are shown on Figure R XXX. Garage door glazed opening protection for windborne debris shall meet the requirements of an approved impact-resisting standard or ANSI/DASMA 115."

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AMERICAN ARCHITECTURAL

AAMA 506-06

Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products



MANUFACTURERS ASSOCIATION

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AAMA 506-06
ORIGINALLY PUBLISHED: 2000
PRECEDING DOCUMENT: 506-00
REVISED: 3/06
PUBLISHED: 3/06

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1.0 SCOPE

1.1 This specification uses existing ASTM test methods to qualify windows, doors, skylights, storefronts and curtain walls as "hurricane resistant".

1.2 This specification is intended to include fenestration products of all framing materials covered by the gateway documents listed in paragraph 1.3.

1.3 Products seeking qualification through this specification must first satisfy the gateway requirements of one of the following:

1.3.1 Windows and Glass Doors:

1.3.1.1 AAMA/NWWDA 101/I.S.2-97

1.3.1.2 AAMA/WDMA 101/I.S.2/NAFS-02

1.3.1.3 AAMA/WDMA/CSA 101/I.S.2/A440-05

1.3.2 Curtain walls and Storefront: AAMA 501-05

2.0 REFERENCED DOCUMENTS

2.1 AAMA/NWWDA 101/I.S.2-97, Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors

2.2 AAMA/WDMA 101/I.S.2/NAFS-02, Voluntary Performance Specification for Windows, Skylights and Glass Doors – A North American Fenestration Standard

2.3 AAMA/WDMA/CSA 101/I.S.2/A440-05, Standard/ Specification for Windows, Doors, and Unit Skylights

2.4 AAMA 501-05, Methods of Test for Exterior Walls

2.5 ASTM E 1886-02 or -05, Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials

2.6 ASTM E 1996-02 or -05, Standard Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes

3.0 SIGNIFICANCE AND USE

3.1 This specification provides a system for rating the ability of windows, doors, skylights, storefront and curtain walls and sliding glass doors to withstand impact and pressure cycling generally associated with hurricane conditions.

3.2 The basis for this specification is initial qualification through one of the gateway documents referenced in paragraph 1.3 followed by impact and cycle testing in accordance with ASTM E 1886 and ASTM E 1996.

4.0 APPARATUS

4.1 Apparatus shall meet the requirements outlined in ASTM E 1886.

5.0 CALIBRATION

5.1 Calibration of all test equipment shall be performed in accordance with ASTM E 1886.

5.2 Calibration records shall be maintained for a period of no less than four years.

6.0 TEST SPECIMENS

In addition to the guidelines given in ASTM E 1886 and ASTM E 1996, the following requirements shall be met:

6.1 Test specimens shall be the largest size for which approval is desired.

6.2 To be approved to this specification, mullions shall be tested as part of the test samples. Testing of one mullion profile or configuration does not qualify any other mullion profile or configuration. Exception: The addition of cladding or of a wrapped material to the mullion will not constitute a change in profile or configuration providing material is not removed from the mullion.

Mullions shall only be qualified to the largest window or door (width and height) on which testing is performed.

6.3 To be approved to this specification, true muntins shall be tested as part of the test samples. Testing of one muntin profile or configuration does not qualify any other muntin profile or configuration. Any variation in muntin joinery, wall thickness or glazing application can only be approved by testing the variation(s) through the entire procedure outlined in ASTM E 1886.

7.0 TEST SPECIMEN PREPARATION

7.1 Test specimen shall be mounted using anchors and anchor spacing for which approval is desired. To qualify more than one anchor type, at least one of the test samples must be tested with that anchor and its appropriate framing material (i.e. wood, masonry, etc.).

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7.2 Test specimen shall not incorporate anchors, supports or stiffeners that are not intended to be included during normal installation.

8.0 TEST REPORT

8.1 In addition to the items required by ASTM E 1886 and ASTM E 1996, the following items shall be detailed in the test report.

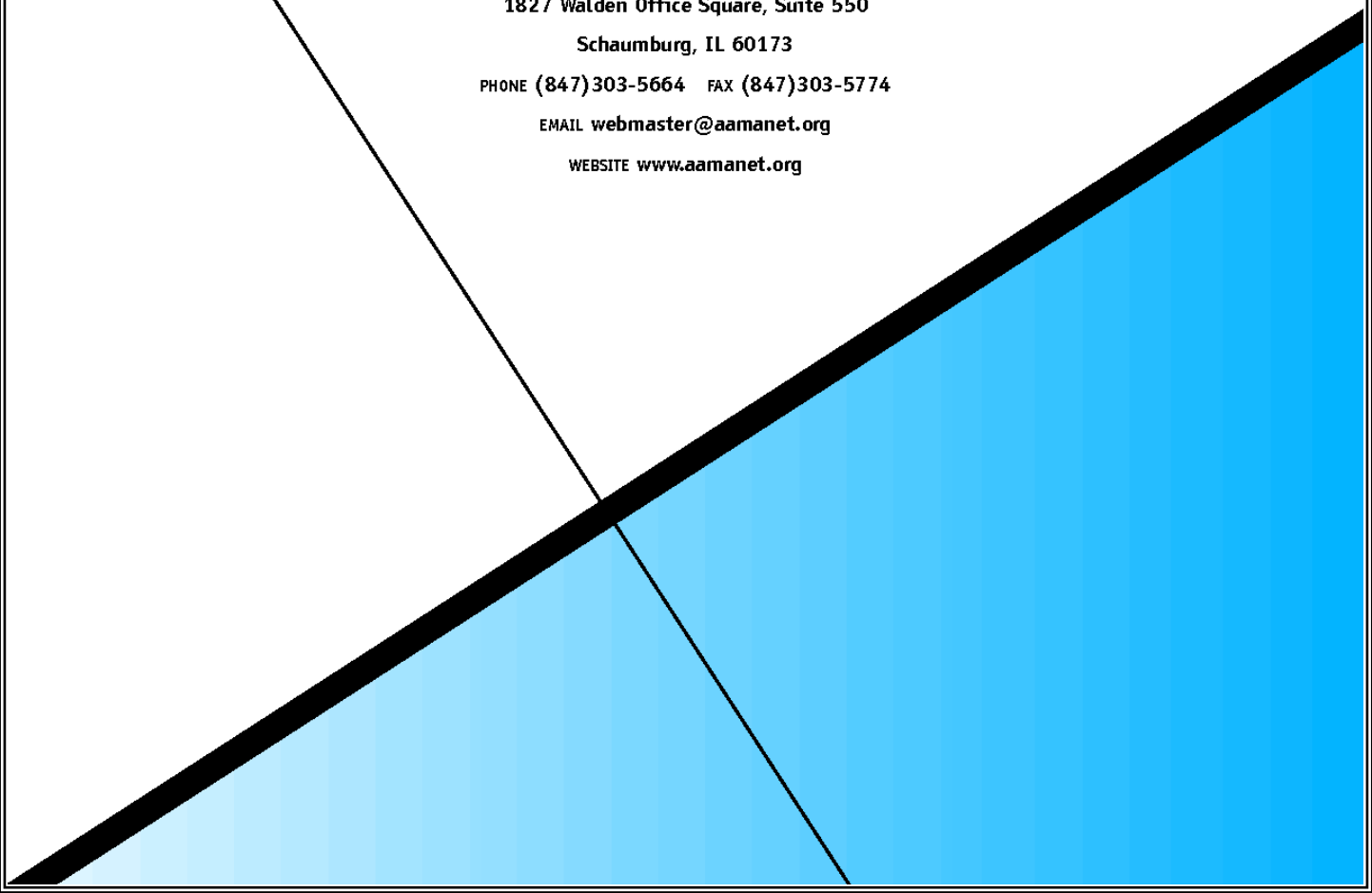
8.1.1 A reference to the test report showing compliance with the gateway requirements of paragraph 1.3.

8.1.2 A description of the anchor type and spacing used during the test with any necessary drawings to adequately describe anchor details and accurate anchor locations.

8.1.3 When used, accurate identification of mullions and muntins including extrusion drawings, shall accompany the test report.

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AMERICAN ARCHITECTURAL

AAMA 506-08

Voluntary Specifications for Impact and Cycle Testing of Fenestration Products





MANUFACTURERS ASSOCIATION

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AAMA 506-08
ORIGINALLY PUBLISHED: 2000
PRECEDING DOCUMENT" 506-06
PUBLISHED: 4/08

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1.0 SCOPE

1.1 This specification uses existing ASTM test methods to qualify windows, doors and skylights as "impact resistant."

1.2 This specification is intended to include fenestration products of all framing materials covered by the standards and specifications listed in Section 1.3.

1.3 Products seeking qualification through this specification shall first satisfy the minimum requirements of one of the following:

1.3.1 AAMA/NWWDA 101/I.S. 2-97

1.3.2 AAMA/WDMA 101/I.S. 2/NAFS-02

1.3.3 AAMA/WDMA/CSA 101/I.S. 2/A440-05

1.3.4 AAMA/WDMA/CSA 101/I.S. 2/A440-08

2.0 REFERENCED DOCUMENTS

2.1 References to the documents listed below shall be to the edition indicated. Any updated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

2.2 American Architectural Manufacturers Association (AAMA)

AAMA/NWWDA 101/I.S.2-97, Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors

AAMA/WDMA 101/I.S.2/NAFS-02, Voluntary Performance Specification for Windows, Skylights and Glass Doors – A North American Fenestration Standard

AAMA/WDMA/CSA 101/I.S.2/A440-05, Standard/ Specification for Windows, Doors, and Unit Skylights

AAMA/WDMA/CSA 101/I.S.2/A440-08, North American Fenestration Standard/Specification for Windows, Doors, and Skylights

AAMA 450-06, Voluntary Performance Rating Method for Mulled Fenestration Assemblies

2.3 ASTM International (ASTM)

ASTM E 1886-02 or -05, Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials

ASTM E 1996-02 or -05, Standard Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes

3.0 SIGNIFICANCE AND USE

3.1 This specification provides a system for rating the ability of windows, doors, skylights and sliding glass doors to withstand impact and pressure cycling generally associated with hurricane conditions.

3.2 The basis for this specification is initial qualification through one of the standards and specifications referenced in Section 1.3, followed by impact and cycle testing in accordance with ASTM E 1886 and ASTM E 1996.

4.0 APPARATUS

Apparatus shall meet the requirements outlined in ASTM E 1886.

5.0 CALIBRATION

5.1 Calibration of all test equipment shall be performed in accordance with ASTM E 1886.

5.2 Calibration records shall be maintained for a period of no less than four years.

6.0 TEST SPECIMENS

In addition to the guidelines given in ASTM E 1886 and ASTM E 1996, the following requirements shall be met:

6.1 Test specimens shall be the largest size for which approval is desired.

6.2 To be approved to this specification, mullions shall be tested as part of the test samples. Testing of one mullion profile or configuration does not qualify any other mullion profile or configuration (except as allowed for in Section 8.5).

EXCEPTION: *The addition of cladding or a wrapped material to the mullion will not constitute a change in profile or configuration, providing material is not removed from the mullion.*

Mullions shall only be qualified to the largest window or door (width and height) on which testing is performed.

6.3 To be approved to this specification, true muntins shall be tested as part of the test samples. Testing of one muntin profile or configuration does not qualify any other muntin profile or configuration. Any variation in muntin joinery, wall thickness or glazing application can only be approved by testing the variation(s) through the entire procedure outlined in ASTM E 1886.

7.0 TEST SPECIMEN PREPARATION

7.1 Test specimen shall be mounted using anchors and anchor spacing for which approval is desired. To qualify more than one anchor type, at least one of the test samples must be tested with that anchor and its surrounding building substrate for which qualification by this standard is sought.

7.2 Test specimen shall not incorporate anchors, supports or stiffeners that are not intended to be included during normal installation.

8.0 QUALIFICATION OF ALTERNATE CONSTRUCTIONS

8.1 The qualification of the following alternate constructions or details shall be accomplished by successful completion of all requirements of Section 6.0 (no additional testing is required).

a) Simulated divided lites
b) Thicker glass of same type
c) Reflective coatings, low-emissivity coatings, frits, and tints of same glass type
d) Increase in thickness of interlayer
e) Change of color or opacity of interlayer
f) Non-structural cosmetic changes (i.e. escutcheons)
g) Change of glazing back bedding color from the same manufacturer, provided the new color is made from the same or equivalent back bedding compound

8.2 The following alternate constructions or details shall be qualified by successful completion of all requirements of Section 6.0 on one additional specimen. Multiple construction changes made to discrete specimens shall be tested in combination to ensure the compatibility of the intended combination.

a) Alternate anchorage details (size, spacing, type or substrate)
b) Change of glazing back bedding manufacturer (same or equivalent back bedding compound)
c) Change in glass type
d) Change in interlayer manufacturer
e) Change insulating glass to monolithic
f) Spacer change
g) Change in hinging hardware
h) Change in locking hardware
i) Insulating glass sealant changes provided requirements of AAMA/NWWDA 101/I.S .2-97, AAMA/WDMA 101/I.S. 2/NAFS-02, AAMA/WDMA/CSA 101/I.S. 2/A440-05 or AAMA/WDMA/CSA 101/I.S. 2/A440-08 are maintained

EXAMPLE: *An additional specimen qualifies a change in back bedding, a second additional specimen qualifies a different interlayer manufacturer; because the alternate back bedding was not tested with the alternate interlayer, the combination of the two alternates shall not be qualified by this testing scenario.*

8.3 The anchorage details (size, spacing or substrate) shall be permitted to qualify by submittal of calculations according to accepted engineering practice.

8.4 Alternate constructions not listed in Sections 8.1 or 8.2 shall be qualified with three test specimens successfully completing the requirements of this standard. Alternate constructions qualified by Section 8.2 shall not be allowed the opportunity of one replacement specimen that ASTM E 1996 permits for the three base specimens.

8.5 QUALIFICATION OF MULLED ASSEMBLIES IN CONJUNCTION WITH AAMA 450

8.5.1 Mulled assemblies shall be qualified by this document if all of the following conditions are met:

a) The largest assembly with the longest mullion shall be impacted at its midpoint
b) The assembly shall be certified to AAMA 450
c) Individual units making up the assembly shall all comply with this document

8.5.2 Impact resistant assemblies meeting the requirements of Section 8.5.1 shall be permitted to follow the same rules of unit substitution that are permitted by AAMA 450.

8.5.3 Qualification of an assembly with the longest mullion shall qualify that mullion for other assemblies containing that same mullion at a shorter length. Section 8.5.2 shall apply to these other assemblies.

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9.0 TEST REPORT

9.1 In addition to the items required by ASTM E 1886 and ASTM E 1996, the following items shall be detailed in the test report:

9.1.1 A reference to the test report showing compliance with the gateway requirements of Section 1.3.

9.1.2 A description of the anchor type and spacing used during the test with any necessary drawings to adequately describe anchor details and accurate anchor locations.

9.1.3 When used, accurate identification of mullions and muntins including extrusion drawings shall accompany the test report.

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Changes from AAMA 506-06 to AAMA 506-08

- Various editorial changes were made
- Removed the reference to storefronts and curtain walls
- Allowed an exception in Section 6.2
- Added, “surrounding building substrate for which qualification by this standard is sought” in Section 7.1
- Added new Section 8.0, “Qualification of Alternate Constructions”

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AMERICAN ARCHITECTURAL

AAMA 506-11

Voluntary Specifications for Impact and Cycle Testing of Fenestration Products

MANUFACTURERS ASSOCIATION

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Date Submitted	7/28/2012	**Section**	R301.2.1.2	**Proponent**	Joseph Belcher
Chapter	3	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Modifies opening protection to bring forward currently permitted standards.

Rationale

The proposal makes the Section consistent with the FBCR and a previous Declaratory Statement.The proposal modifies existing language indicating the glazed opening is being protected, not just the glazing. This was placed in the FBCB in the 2007 Supplements in response to a Declaratory Statement clarifying the application of ASTM E 1996-05 related to glass breakage. (DCA08 DEC002) The Declaratory Statement is valid for all editions of ASTM E 1996 adopted by reference by the FBCR, including the 2009 Edition.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity relative to enforcement of code because the provisions retain what is in the FBCB 2010 and 2007 Editions. The provisions are field tested and proven to be beneficial to enforcement. The original proposal was supported by the hurricane protection industry.

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

Will not result in any cost because the provisions retain what is contained in the FBCB 2010 and 2007 Editions. The provisions are field tested and proven to be beneficial to the property owners. The original proposal was supported by the hurricane protection industry.

Impact to industry relative to the cost of compliance with code

Will not result in any cost because the provisions retain what is contained in the FBCB 2010 and 2007 Editions. The provisions are field tested and proven to be beneficial to the industry. The original proposal was supported by the hurricane protection industry.

Requirements

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

The provisions are carried over from previous editions and are field tested and proven to be effective.

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

The provisions are carried over from previous editions and are field tested and proven to be effective.

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

The provisions are carried over from previous editions and are field tested and proven to be effective and do not discriminate.

Does not degrade the effectiveness of the code

The provisions are carried over from previous editions and are field tested and proven to be effective.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5718 Text Modification

R301.2.1.2 Protection of openings. ~~Exterior glazing~~ Glazed openings in buildings located in windborne debris regions shall be protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E 1996 and ASTM E 1886 referenced therein, SSTD 12, TAS 201, 202 and 203, or AAMA 506, as applicable. The applicable wind zones for establishing misile types in ASTM E 1996 are shown on Figure R301.2(4)C. Garage door glazed opening protection for windborne debris shall meet the requirements of an approved impact-resisting standard or ANSI/DASMA 115.

Page: 1

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The State of Florida is the only of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection.

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The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

S5718 Prior Code Version question. submitted or attempted to be included

Page: 1

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Date Submitted	7/27/2012	**Section**	R301.2.1.4	**Proponent**	T Stafford
Chapter	3	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

The proposal reinstates the surface roughness and exposure category definitions from the 2010 FBCR.

Rationale

This proposal reinstates the surface roughness and exposure category definitions form the 2010 FBCR. This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

The Structural TAC decided a couple of cycles ago that the exposure category requirements should be consistent between the building and residential codes. The language proposed here is consistent with the definitions in ASCE 7, the 2010 FBCB, and the 2012 IBC. The IRC exposure definitions have not been updated in quite some time and differ quite a bit from the 2012 IBC and the 2010 FBCR.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

~~**R301.2.1.4 Exposure category.** For each wind direction considered, an exposure category that adequately reflects the characteristics of ground surface irregularities shall be determined for the site at which the building or structure is to be constructed. For a site located in the transition zone between categories, the category resulting in the largest wind forces shall apply. Account shall be taken of variations in ground surface roughness that arise from natural topography and vegetation as well as from constructed features. For a site where multiple detached one- and two-family dwellings, townhouses or other structures are to be constructed as part of a subdivision, master-planned community, or otherwise designated as a developed area by the authority having jurisdiction, the exposure category for an individual structure shall be based upon the site conditions that will exist at the time when all adjacent structures on the site have been constructed, provided their construction is expected to begin within one year of the start of construction for the structure for which the exposure category is determined. For any given wind direction, the exposure in which a specific building or other structure is sited shall be assessed as being one of the following categories:~~

~~1. Exposure A. Large city centers with at least 50 percent of the buildings having a height in excess of 70 feet (21 336 mm). Use of this exposure category shall be limited to those areas for which terrain representative of Exposure A prevails in the upwind direction for a distance of at least 0.5 mile (0.8 km) or 10 times the height of the building or other structure, whichever is greater. Possible channeling effects or increased velocity pressures due to the building or structure being located in the wake of adjacent buildings shall be taken into account.~~

~~2. Exposure B. Urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of singlefamily dwellings or larger. Exposure B shall be assumed unless the site meets the definition of another type exposure.~~

~~3. Exposure C. Open terrain with scattered obstructions, including surface undulations or other irregularities, having heights generally less than 30 feet (9144 mm) extending more than 1,500 feet (457 m) from the building site in any quadrant. This exposure shall also apply to any building located within Exposure B type terrain where the building is directly adjacent to open areas of Exposure C type terrain in any quadrant for a distance of more than 600 feet (183 m). This category includes flat, open country and grasslands.~~

~~4. Exposure D. Flat, unobstructed areas exposed to wind flowing over open water for a distance of at least 1 mile (1.61 km). Shorelines in Exposure D include inland waterways, the Great Lakes, and coastal areas of California, Oregon, Washington and Alaska. This exposure shall apply only to those buildings and other structures exposed to the wind coming from over the water. Exposure D extends inland from the shoreline a distance of 1500 feet (457 m) or 10 times the height of the building or structure, whichever is greater.~~

R301.2.1.4 Exposure category. For each wind direction considered, an exposure category that adequately reflects the characteristics of ground surface irregularities shall be determined for the site at which the building or structure is to be constructed. For a site located in the transition zone between categories, the category resulting in the largest wind forces shall apply. Account shall be taken of variations in ground surface roughness that arise from natural topography and vegetation as well as from constructed features. For any given wind direction, the exposure in which a specific building or other structure is sited shall be assessed as being one of the following categories.

Exception: An intermediate exposure between the exposure categories defined is permitted in a transition zone provided that it is determined by a rational analysis method.

R301.2.1.4.1 Wind directions and sectors. For each selected wind direction at which the wind loads are to be evaluated, the exposure of the building or structure shall be determined for the two upwind sectors extending 45 degrees (0.79 rad) either side of the selected wind direction. The exposures in these two sectors shall be determined in accordance with Sections R301.2.4.2 and R301.2.1.4.3 and the exposure resulting in the highest wind loads shall be used to represent winds from that direction.

R301.2.1.4.2 Surface roughness categories. A ground surface roughness within each 45-degree 4(0.79 rad) sector shall be determined for a distance upwind of the site as defined in Section R301.2.1.4.3 from the categories defined below, for the purpose of assigning an exposure category as defined in Section R301.2.1.4.3.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5694_TextOfModification_1.png

Surface Roughness B. Urban and suburban areas, wooded areas or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger.

Surface Roughness C. Open terrain with scattered obstructions having heights generally less than 30 feet (9144 mm). This category includes flat open country and grasslands. This surface roughness shall also apply to any building located within surface roughness B-type terrain where the building is within 100 feet horizontally in any direction of open areas of surface roughness C or D-type terrain that extends more than 600 feet (182.9 m) and width greater than 150 ft. in the upwind direction. Short-term (less than two year) changes in the pre-existing terrain exposure, for the purposes of development, shall not be considered surface roughness C. Where development buildout will occur within three years and the resultant condition will meet the definition of surface roughness B, surface roughness B shall be regulating for the purpose of permitting. This category includes flat open country and grasslands and shall extend downwind for a distance of 1500 feet.

Surface Roughness D. Flat, unobstructed areas and water surfaces. This category includes smooth mud flats, salt flats and unbroken ice.

R301.2.1.4.3 Exposure categories. An exposure category shall be determined in accordance with the following:

Exposure B. For buildings with a mean roof height of less than or equal to 30 feet, Exposure B shall apply where the ground surface roughness, as defined by Surface Roughness B, prevails in the upwind direction for a distance of at least 1,500 ft (457 m). For buildings with a mean roof height greater than 30 ft, Exposure B shall apply where Surface Roughness B prevails in the upwind direction for a distance of at least 2,600 feet (792 m) or 20 times the height of the building, whichever is greater.

Exposure C. Exposure C shall apply for all cases where Exposures B or D do not apply.

Exposure D. Exposure D shall apply where the ground surface roughness, as defined by Surface Roughness D, prevails in the upwind direction for a distance of at least 5,000 feet (1524 m) or 20 times the height of the building, whichever is greater. Exposure D shall also apply where the ground surface roughness immediately upwind of the site is B or C, and the site is within a distance of 600ft (183 m) or 20 times the building height, whichever is greater, from an exposure D condition as defined in the previous sentence.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5694_TextOfModification_2.png

Date Submitted	7/27/2012	**Section**	R301.2.1.6	**Proponent**	T Stafford
Chapter	3	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Correlation with ASCE 7-10.

Rationale

This proposal part of a series of proposals that reinstate the ultimate wind speed maps in the FBCR. The proposal is a correlation with the main proposal updating the maps.

This language is currently contained in the 2010 FBC. No new requirements are being proposed. This proposal simply clarifies that the design pressures determined from ASCE 7 can be multiplied by 0.6 for testing protocols that are based on allowable or nominal wind loads. The wind speeds in ASCE 7-10 are strength-design level loads. Some reference standards, such as ASTM E 330, are based on test criteria that assumes the wind loads are nominal or allowable wind loads. The language provides the correlation between these reference standards and the strength design-level loads of ASCE 7-10.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R301.2.1.6 Testing to allowable or nominal loads. Where testing for wind load resistance is based on allowable or nominal wind loads, the design wind loads determined in accordance with ASCE 7 or Section 1609 of the Florida Building Code, Building are permitted to be multiplied by 0.6 for the purposes of the wind load resistance testing.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5700_TextOfModification_1.png

Date Submitted	7/30/2012	**Section**	R301.9	**Proponent**	Joseph Belcher
Chapter	3	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

703.13 Soffit labeling and installation provisions

Summary of Modification

Reloctes existing wall covering and soffit design criteria from R617.4 to R301.9; adds reference to C&C load tables.

Rationale

The section is brought forward and relocated from Section R617.4 to the design criteria section of the code. The reference to Tables R301.2(2) and R301.2(3) were added to provide the proper design pressures. The Florida hurricanes of 2004 revealed the soffit provisions of the base code to be a very weak link in the building water intrusion resistance system. In numerous cases severe water damage was caused by rain blown in through soffit spaces where the soffit was blown out or dislodged. In most cases the storms were below design wind speeds. In response, the Commission appointed a Soffit Work Group to study the issue and propose changes as deemed necessary. The proposed language embodies the recommendations of the Work Group to date and was first placed in the 2010 FBC.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impacts on cost to local entity relative to enforcement of code as the provisions are currently in effect without any new requirements created. The proposal benefits local enforcement by establishing the loads soffits are to be designed to resist and a stabling a safety factor for testing.

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

No impacts on cost to owners relative to enforcement of code as the provisions are currently in effect without any new requirements created.

Impact to industry relative to the cost of compliance with code

No impacts to industry as the provisions are currently in effect without any new requirements created.

Requirements

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

Bringing the provisions forward improves safety and welfare of the general public by establishing criteria for the design of soffits, thereby increasing the likelihood they will remain in place during a high wind event.

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

Bringing the provisions forward, relocating the criteria, and referencing the appropriate tables improves the code by establishing clearly criteria for the design of soffits, thereby increasing the likelihood they will remain in place during a high wind event.

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

The proposed amendment does not discriminate.

Does not degrade the effectiveness of the code

Bringing the provisions forward, relocating the criteria, and referencing the appropriate tables improves the effectiveness of the code by establishing clearly criteria for the design of soffits, thereby increasing the likelihood they will remain in place during a high wind event.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

Vinyl soffits are addressed, but other materials are not. Labeling is not required.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5743 Text Modification

R301.9 All exterior wall coverings and soffits shall be capable of resisting the design pressures specified for walls for components and cladding loads in accordance with Table R301.2(2) as modified by Table R301.2(3). Manufactured soffits shall be tested at 1.5 times the design pressure.

Page: 1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5743_TextOfModification_1.png

The State of Florida is the only one of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection. Extensive damage was caused by water intrusion due to soffit failure during the storms of 2004. The history of loss to water intrusion through failed soffits indicates the need for more vigorous requirements than those provided by the base code.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5743_PQ2_EvidenceData_Soffit_1.png

S5743 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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Date Submitted	7/30/2012	**Section**	R301.9	**Proponent**	Joseph Belcher
Chapter	3	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

703.13 Soffit labeling and installation provisions

Summary of Modification

Reloctes existing wall covering and soffit design criteria from R617.4 to R301.9; adds reference to C&C load tables.

Rationale

The section is brought forward and relocated from Section R617.4 to the design criteria section of the code. The reference to Tables R301.2(2) and R301.2(3) were added to provide the proper design pressures. The Florida hurricanes of 2004 revealed the soffit provisions of the base code to be a very weak link in the building water intrusion resistance system. In numerous cases severe water damage was caused by rain blown in through soffit spaces where the soffit was blown out or dislodged. In most cases the storms were below design wind speeds. In response, the Commission appointed a Soffit Work Group to study the issue and propose changes as deemed necessary. The proposed language embodies the recommendations of the Work Group to date and was first placed in the 2010 FBC.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impacts on cost to local entity relative to enforcement of code as the provisions are currently in effect without any new requirements created. The proposal benefits local enforcement by establishing the loads soffits are to be designed to resist and a stabling a safety factor for testing.

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

No impacts on cost to owners relative to enforcement of code as the provisions are currently in effect without any new requirements created.

Impact to industry relative to the cost of compliance with code

No impacts to industry as the provisions are currently in effect without any new requirements created.

Requirements

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

Bringing the provisions forward improves safety and welfare of the general public by establishing criteria for the design of soffits, thereby increasing the likelihood they will remain in place during a high wind event.

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

Bringing the provisions forward, relocating the criteria, and referencing the appropriate tables improves the code by establishing clearly criteria for the design of soffits, thereby increasing the likelihood they will remain in place during a high wind event.

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

The proposed amendment does not discriminate.

Does not degrade the effectiveness of the code

Bringing the provisions forward, relocating the criteria, and referencing the appropriate tables improves the effectiveness of the code by establishing clearly criteria for the design of soffits, thereby increasing the likelihood they will remain in place during a high wind event.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

The basse code addresses vinyl soffit only and does not require labeling.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R301.9 Exterior wall coverings and soffits. All exterior wall coverings and soffits shall be capable of resisting the design pressures specified for walls for components and cladding loads in accordance with Table R301.2(2) as modified by Table R301.2(3). Manufactured soffits shall be tested at 1.5 times the design pressure.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5745_TextOfModification_1.png

The State of Florida is the only one of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection. Extensive damage was caused by water intrusion due to soffit failure during the storms of 2004. The history of loss to water intrusion through failed soffits indicates the need for more vigorous requirements than those provided by the base code.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5745_PQ2_EvidenceData_Soffit_1.png

S5745 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

Page: 1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5745_PQ3_Submitted_Time_IBC_IRC_1.png

Date Submitted	7/19/2012	**Section**	R318.7	**Proponent**	Jack Glenn
Chapter	3	**Affects HVHZ**	No	**Attachments**	No

General Comments No

Alternate Language No

Related Modifications

Summary of Modification

Reformat the Termite Inspection requirements by moving section R704 to a new Section R381.7

Rationale

This change would move a Florida Specific amendment from Chapter 7, Section 704, to Section R318.7 to provide the termite protection criteria in the same section of the code. Further it would move change the definition of “Decorative Cementitious Coating” to Decorative Cementitious Finish” to provide a definition for the term used in section 318.7.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Proposed language is consistent with the 2010 Florida Building Code.

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

None. Proposed language is consistent with the 2010 Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. Proposed language is consistent with the 2010 Florida Building Code.

Requirements

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

Yes. Proposed language is consistent with the 2010 Florida Building Code.

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

Yes. Proposed language is consistent with the 2010 Florida Building Code.

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

No, does not discriminate. Proposed language is consistent with the 2010 Florida Building Code.

Does not degrade the effectiveness of the code

Does not degrade the code. Proposed language is consistent with the 2010 Florida Building Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

New Section R318.7

New section R318.7 ~~SECTION R7O4~~ INSPECTION FOR TERMITES

In order to provide for inspection for termite infestation, clearance between exterior wall coverings and final earth grade on the exterior of a building shall not be less than 6 inches (152 mm).

Exceptions:

l. Paint or decorative cementitious finish less than 5/8 inch (17.1 mm) thick adhered directly to the masonry foundation sidewall.

2. Access or vehicle ramps which rise to the interior finish floor elevation for the width of such ramps only.

3. A 4-inch (102 mm) inspection space above patio and garage slabs and entry areas.

4. If the patio has been soil treated for termites, the finish elevation may match the building interior finish floor elevations on masonry construction only.

5. Masonry veneers constructed in accordance with Section R318.4.

Section 202

DECORATIVE CEMENTITIOUS ~~COATING~~ FINISH. A skim coat, as defined in ASTM C 926, of Portland cement-based plaster applied to concrete or masonry surfaces intended for cosmetic purposes.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5416_TextOfModification_1.png

Date Submitted	7/20/2012	**Section**	SECTION R301 - DESIGN CRITER	**Proponent**	Ken Cureton
Chapter	3	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Modify SECTION R301.2.1.2

Rationale

To comply with s. 553.73(7)(a) Florida Statutes, the proposed modification will supplement the most current version of the International Existing Building Code (IEBC) base code with Florida specific requirements in accordance with the Commission's approved code change process for the update to the 2013 Florida Building Code. The proposed modification is necessary in order to maintain compliance with Florida Statutes.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

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

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Requirements

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Does not degrade the effectiveness of the code

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

The proposed code change was submitted in accordance with the Commission's update process for the 2013 FBC in order to maintain compliance with Florida Statutes.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

Modify **SECTION R301.2.1.2** as follows:

R301.2.1.2 Protection of openings. Exterior glazing in buildings located in windborne debris regions shall be protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E 1996 and ASTM E 1886 referenced therein. The applicable wind zones for establishing missile types in ASTM E 1996 are shown on Figure R301.2(4)C. Garage door glazed opening protection for windborne debris shall meet the requirements of an *approved* impact-resisting standard or ANSI/DASMA 115.

1. Opening in sunrooms, balconies or enclosed porches constructed under existing roofs or decks are not required to be protected provided the spaces are separated from the building interior by a wall and all openings in the separating wall are protected in accordance with this section. Such space shall be permitted to be designed as either partially enclosed or enclosed structures.

2. Storage sheds that are not designed for human habitation and that have a floor area of 720 square feet (67 m2) or less are not required to comply with the mandatory wind-borne debris impact standard of this code.

Exception: Wood structural panels with a minimum thickness of $^{7}/_{16}$ inch (11 mm) and a maximum span of 8 feet (2438 mm) shall be permitted for opening protection in one- and two-story buildings. Panels shall be precut and attached to the framing surrounding the opening containing the product with the glazed opening. Panels shall be predrilled as required for the anchorage method and shall be secured with the attachment hardware provided. Attachments shall be designed to resist the component and cladding loads determined in accordance with either Table R301.2(2) or ASCE 7, with the permanent corrosion-resistant attachment hardware provided and anchors permanently installed on the building. Attachment in accordance with Table R301.2.1.2 is permitted for buildings with a mean roof height of 33 feet (10 058 mm) or less where located in Wind Zones 1 and 2 in accordance with Figure R301.2(4)C.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5432_TextOfModification_1.png

Date Submitted	7/20/2012	**Section**	SECTION R301-DESIGN CRITERI	**Proponent**	Ken Cureton
Chapter	3	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Modify SECTION R301

Rationale

To comply with s. 553.73(7)(a) Florida Statutes, the proposed modification will supplement the most current version of the International Existing Building Code (IEBC) base code with Florida specific requirements in accordance with the Commission's approved code change process for the update to the 2013 Florida Building Code. The proposed modification is necessary in order to maintain compliance with Florida Statutes.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

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

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Requirements

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Does not degrade the effectiveness of the code

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

The proposed code change was submitted in accordance with the Commission's update process for the 2013 FBC in order to maintain compliance with Florida Statutes.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5430-G1

Proponent Ken Cureton **Submitted** 9/21/2012 **Attachments** No

Comment:

The proposal adds provisions for local wind maps as per Chapter 2000 – 141 (Section 109(4)) Florida Law.

Modify **Figure R301.2(4)A** - add footnote as follows:

5. This map is accurate to the county. Local governments establish specific wind speed/wind-borne debris lines using physical landmarks such as major roads, canals, rivers, and shorelines.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5430_TextOfModification_1.png

Date Submitted	7/20/2012	**Section**	SECTION R324 – AIRPORT NOISE	**Proponent**	Ken Cureton
Chapter	3	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Add SECTION R324

Rationale

To comply with s. 553.73(7)(a) Florida Statutes, the proposed modification will supplement the most current version of the International Existing Building Code (IEBC) base code with Florida specific requirements in accordance with the Commission's approved code change process for the update to the 2013 Florida Building Code. The proposed modification is necessary in order to maintain compliance with Florida Statutes.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

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

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. Proposed language is currently adopted by the 2010 Florida Building Code.

Requirements

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

Yes. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

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

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Does not degrade the effectiveness of the code

It does not. The Proposed language for this Modification is currently included in the 2010 Florida Building Code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

The proposed code change was submitted in accordance with the Commission's update process for the 2013 FBC in order to maintain compliance with Florida Statutes.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

Proponent Ken Cureton **Submitted** 9/21/2012 **Attachments** No

Comment:
The proposal provides for provisions with regard to noise contour lines as per 553.73(7)(b) FS.

S5441-G1

S5441 Text Modification

Page: 1

Add **SECTION R324.1** as follows:

SECTION R324

AIRPORT NOISE

R324.1 Airport noise study guidelines. TheAviation Safety and Noise Abatement Act of 1979 14 CFR Part 150 (US Department of Transportation) including revisions through January 2005 and hereby adopted as a guideline for establishing airport noise control. When required by a local government by local ordinance to providenoise attenuation in a new structure or addition to an existing structure near an airport in the area of the local government, the applicant must provide either:

1. A testing certificate from an accredited noise testing lab that a new structure or addition to existing structure built to the submitted engineering plans will achieve an average minimum dBA reduction equal to or greater than the reduction required,

2. An engineering judgment signed and sealed by an engineer licensed in the State of Florida that the structure or addition built to the submitted engineering plans will achieve an average minimum dBA reduction equal to or greater than the reduction required, or

3. Plans using the standards contained in "Guidelines for Sound Insulation of Residences Exposed to Aircraft Operations" prepared for the Department of the Navy by Wyle Research and Consulting, Arlington, Virginia, April 2005 on file with the Florida Building Commission.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5441_TextOfModification_1.png

S5702

Date Submitted	7/27/2012	**Section**	Table R301.2(2)	**Proponent**	T Stafford
Chapter	3	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Correlation with ASCE 7-10. Reinstates the component and cladding load table from the 2010 FBCR.

Rationale

This proposal part of a series of proposals that reinstate the ultimate wind speed maps in the FBCR. The proposal is a correlation with the main proposal updating the maps.

This language is currently contained in the 2010 FBCR. No new requirements are being proposed. This proposal simply incorporates the new simplified component and cladding loads table from ASCE 7-10 into the FBCR. The existing table in the 2012 IRC is based on nominal wind loads.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5702 Text Modification

Page: 1

Delete Table R301.2(2) and replace with the following:

TABLE R301.2(2)

COMPONENT AND CLADDING LOADS FOR A BUILDING WITH A MEAN ROOF HEIGHT OF 30 FEET LOCATED IN EXPOSURE B (psf) [a,b,c,d,e,f]

a. The effective wind area shall be equal to the span length multiplied by an effective width. This width shall be permitted to be not be less than one-third the span length. For cladding fasteners, the effective wind area shall not be greater than the area that is tributary to an individual fastener.

b. For effective areas between those given above, the load may be interpolated; otherwise, use the load associated with the lower effective area.

c. Table values shall be adjusted for height and exposure by multiplying by the adjustment coefficient in Table R301.2(3).

d. See Figure R301.2(7) for location of zones.

e. Plus and minus signs signify pressures acting toward and away from the building surfaces.

f. Positive design wind pressures shall not be less than +16 psf and negative design wind pressures shall not be less than -16 psf.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5702_TextOfModification_1.png

Ultimate Design V_{ULT}

	Zone	Effective wind area (sf)	Basic Wind Speed V (mph)															
			110		115		120		130		140		150		160		180		200	
Roof 0 to 7 degrees	1	10	8.9	-21.8	9.7	-23.8	10.5	-25.9	12.4	-30.4	14.3	-35.3	16.5	-40.5	18.7	-46.1	23.7	-58.3	29.3	-72.0
	1	20	8.3	-21.2	9.1	-23.2	9.9	-25.2	11.6	-29.6	13.4	-34.4	15.4	-39.4	17.6	-44.9	22.2	-56.8	27.4	-70.1
	1	50	7.6	-20.5	8.3	-22.4	9.0	-24.4	10.6	-28.6	12.3	-33.2	14.1	-38.1	16.0	-43.3	20.3	-54.8	25.0	-67.7
	1	100	7.0	-19.9	7.7	-21.8	8.3	-23.7	9.8	-27.8	11.4	-32.3	13.0	-37.0	14.8	-42.1	18.8	-53.3	23.2	-65.9
	2	10	8.9	-36.5	9.7	-39.9	10.5	-43.5	12.4	-51.0	14.3	-59.2	16.5	-67.9	18.7	-77.3	23.7	-97.8	29.3	-120.7
	2	20	8.3	-32.6	9.1	-35.7	9.9	-38.8	11.6	-45.6	13.4	-52.9	15.4	-60.7	17.6	-69.0	22.2	-87.4	27.4	-107.8
	2	50	7.6	-27.5	8.3	-30.1	9.0	-32.7	10.6	-38.4	12.3	-44.5	14.1	-51.1	16.0	-58.2	20.3	-73.6	25.0	-90.9
	2	100	7.0	-23.6	7.7	-25.8	8.3	-28.1	9.8	-33.0	11.4	-38.2	13.0	-43.9	14.8	-50.0	18.8	-63.2	23.2	-78.1
	3	10	8.9	-55.0	9.7	-60.1	10.5	-65.4	12.4	-78.8	14.3	-89.0	16.5	-102.2	18.7	-116.3	23.7	-147.2	29.3	-181.7
	3	20	8.3	-45.5	9.1	-49.8	9.9	-54.2	11.6	-63.6	13.4	-73.8	15.4	-84.7	17.6	-96.3	22.2	-121.9	27.4	-150.5
	3	50	7.6	-33.1	8.3	-36.1	9.0	-39.3	10.6	-46.2	12.3	-53.5	14.1	-61.5	16.0	-69.9	20.3	-88.5	25.0	-109.3
	3	100	7.0	-23.6	7.7	-25.8	8.3	-28.1	9.8	-33.0	11.4	-38.2	13.0	-43.9	14.8	-50.0	18.8	-63.2	23.2	-78.1
Roof > 7 to 27 degrees	1	10	12.5	-19.9	13.7	-21.8	14.9	-23.7	17.5	-27.8	20.3	-32.3	23.3	-37.0	26.5	-42.1	33.6	-53.3	41.5	-65.9
	1	20	11.4	-19.4	12.5	-21.2	13.6	-23.0	16.0	-27.0	18.5	-31.4	21.3	-36.0	24.2	-41.0	30.6	-51.9	37.8	-64.0
	1	50	10.0	-18.6	10.9	-20.4	11.9	-22.2	13.9	-26.0	16.1	-30.2	18.5	-34.6	21.1	-39.4	26.7	-49.9	32.9	-61.6
	1	100	8.9	-18.1	9.7	-19.8	10.5	-21.5	12.4	-25.2	14.3	-29.3	16.5	-33.6	18.7	-38.2	23.7	-48.4	29.3	-59.8
	2	10	12.5	-34.7	13.7	-37.9	14.9	-41.3	17.5	-48.4	20.3	-56.2	23.3	-64.5	26.5	-73.4	33.6	-92.9	41.5	-114.6
	2	20	11.4	-31.9	12.5	-34.9	13.6	-38.0	16.0	-44.6	18.5	-51.7	21.3	-59.3	24.2	-67.5	30.6	-85.4	37.8	-105.5
	2	50	10.0	-28.2	10.9	-30.9	11.9	-33.6	13.9	-39.4	16.1	-45.7	18.5	-52.5	21.1	-59.7	26.7	-75.6	32.9	-93.3
	2	100	8.9	-25.5	9.7	-27.8	10.5	-30.3	12.4	-35.6	14.3	-41.2	16.5	-47.3	18.7	-53.9	23.7	-68.2	29.3	-84.2
	3	10	12.5	-51.3	13.7	-56.0	14.9	-61.0	17.5	-71.6	20.3	-83.1	23.3	-95.4	26.5	-108.5	33.6	-137.3	41.5	-169.5
	3	20	11.4	-47.9	12.5	-52.4	13.6	-57.1	16.0	-67.0	18.5	-77.7	21.3	-89.2	24.2	-101.4	30.6	-128.4	37.8	-158.5
	3	50	10.0	-43.5	10.9	-47.6	11.9	-51.8	13.9	-60.8	16.1	-70.5	18.5	-81.0	21.1	-92.1	26.7	-116.6	32.9	-143.9
	3	100	8.9	-40.2	9.7	-44.0	10.5	-47.9	12.4	-56.2	14.3	-65.1	16.5	-74.8	18.7	-85.1	23.7	-107.7	29.3	-132.9
Roof > 27 to 45 degrees	1	10	19.9	-21.8	21.8	-23.8	23.7	-25.9	27.8	-30.4	32.3	-35.3	37.0	-40.5	42.1	-46.1	53.3	-58.3	65.9	-72.0
	1	20	19.4	-20.7	21.2	-22.6	23.0	-24.6	27.0	-28.9	31.4	-33.5	36.0	-38.4	41.0	-43.7	51.9	-55.3	64.0	-68.3
	1	50	18.6	-19.2	20.4	-21.0	22.2	-22.8	26.0	-26.8	30.2	-31.1	34.6	-35.7	39.4	-40.6	49.9	-51.4	61.6	-63.4
	1	100	18.1	-18.1	19.8	-19.8	21.5	-21.5	25.2	-25.2	29.3	-29.3	33.6	-33.6	38.2	-38.2	48.4	-48.4	59.8	-59.8
	2	10	19.9	-25.5	21.8	-27.8	23.7	-30.3	27.8	-35.6	32.3	-41.2	37.0	-47.3	42.1	-53.9	53.3	-68.2	65.9	-84.2
	2	20	19.4	-24.3	21.2	-26.6	23.0	-29.0	27.0	-34.0	31.4	-39.4	36.0	-45.3	41.0	-51.5	51.9	-65.2	64.0	-80.5
	2	50	18.6	-22.9	20.4	-25.0	22.2	-27.2	26.0	-32.0	30.2	-37.1	34.6	-42.5	39.4	-48.4	49.9	-61.3	61.6	-75.6
	2	100	18.1	-21.8	19.8	-23.8	21.5	-25.9	25.2	-30.4	29.3	-35.3	33.6	-40.5	38.2	-46.1	48.4	-58.3	59.8	-72.0
	3	10	19.9	-25.5	21.8	-27.8	23.7	-30.3	27.8	-35.6	32.3	-41.2	37.0	-47.3	42.1	-53.9	53.3	-68.2	65.9	-84.2
	3	20	19.4	-24.3	21.2	-26.6	23.0	-29.0	27.0	-34.0	31.4	-39.4	36.0	-45.3	41.0	-51.5	51.9	-65.2	64.0	-80.5
	3	50	18.6	-22.9	20.4	-25.0	22.2	-27.2	26.0	-32.0	30.2	-37.1	34.6	-42.5	39.4	-48.4	49.9	-61.3	61.6	-75.6
	3	100	18.1	-21.8	19.8	-23.8	21.5	-25.9	25.2	-30.4	29.3	-35.3	33.6	-40.5	38.2	-46.1	48.4	-58.3	59.8	-72.0
Wall	4	10	21.8	-23.6	23.8	-25.8	25.9	-28.1	30.4	-33.0	35.3	-38.2	40.5	-43.9	46.1	-50.0	58.3	-63.2	72.0	-78.1
	4	20	20.8	-22.6	22.7	-24.7	24.7	-26.9	29.0	-31.6	33.7	-36.7	38.7	-42.1	44.0	-47.9	55.7	-60.6	68.7	-74.8
	4	50	19.5	-21.3	21.3	-23.3	23.2	-25.4	27.2	-29.8	31.6	-34.6	36.2	-39.7	41.2	-45.1	52.2	-57.1	64.4	-70.5
	4	100	18.5	-20.4	20.2	-22.2	22.0	-24.2	25.9	-28.4	30.0	-33.0	34.4	-37.8	39.2	-43.1	49.6	-54.5	61.2	-67.3
	4	500	16.2	-18.1	17.7	-19.8	19.3	-21.5	22.7	-25.2	26.3	-29.3	30.2	-33.6	34.3	-38.2	43.5	-48.4	53.7	-59.8
	5	10	21.8	-29.1	23.8	-31.9	25.9	-34.7	30.4	-40.7	35.3	-47.2	40.5	-54.2	46.1	-61.7	58.3	-78.0	72.0	-96.3
	5	20	20.8	-27.2	22.7	-29.7	24.7	-32.4	29.0	-38.0	33.7	-44.0	38.7	-50.5	44.0	-57.5	55.7	-72.8	68.7	-89.9
	5	50	19.5	-24.6	21.3	-26.9	23.2	-29.3	27.2	-34.3	31.6	-39.8	36.2	-45.7	41.2	-52.0	52.2	-65.8	64.4	-81.3
	5	100	18.5	-22.6	20.2	-24.7	22.0	-26.9	25.9	-31.6	30.0	-36.7	34.4	-42.1	39.2	-47.9	49.6	-60.6	61.2	-74.8
	5	500	16.2	-18.1	17.7	-19.8	19.3	-21.5	22.7	-25.2	26.3	-29.3	30.2	-33.6	34.3	-38.2	43.5	-48.4	53.7	-59.8

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a. The effective wind area shall be equal to the span length multiplied by an effective width. This width shall be permitted to be not be less than one-third the span length. For cladding fasteners, the effective wind area shall not be greater than the area that is tributary to an individual fastener.

b. For effective areas between those given above, the load may be interpolated; otherwise, use the load associated with the lower effective area.

c. Table values shall be adjusted for height and exposure by multiplying by the adjustment coefficient in Table R301.2(3).

d. See Figure R301.2(7) for location of zones.

e. Plus and minus signs signify pressures acting toward and away from the building surfaces.

f. Positive design wind pressures shall not be less than +16 psf and negative design wind pressures shall not be less than -16 psf.

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Date Submitted	7/24/2012	**Section**	R401.1	**Proponent**	Michael Goolsby
Chapter	4	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

The provisions contained in this chapter have unique specifications for application in the HVHZ. The beginning of the chapter needs to refer the reader to Chapter 44 for the applicable HVHZ requirements.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. It provides clarity and direction in the code.

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

No impact. It provides clarity and direction in the code.

Impact to industry relative to the cost of compliance with code

Cost savings by providing clarity and direction in the code.

Requirements

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

None. The MOD provides direction and clarity for applicable HVHZ requirements.

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

Strengthens the code by providing clarity and direction when working in the HVHZ.

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

The modification does not discriminate against materials, products, methods or systems of construction.

Does not degrade the effectiveness of the code

This modification enhances the code by directing users to the proper chapter of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5626-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

This change is not necessary as Section R301.1 directs users to the provisions of Chapter 44 for structures located in the High Velocity Hurricane Zone.

R401.1 Application. The provisions of this chapter shall control the design and construction of the foundation and foundation spaces for all buildings. In addition to the provisions of this chapter, the design and construction of foundations in flood hazard areas as established by Table R301.2(1) shall meet the provisions of Section R322. Wood foundations shall be designed and installed in accordance with AF&PA PWF.

Exception: The provisions of this chapter shall be permitted to be used for wood foundations only in the following situations:

1. In buildings that have no more than two floors and a roof.

2. When interior basement and foundation walls are constructed at intervals not exceeding 50 feet (15 240 mm).

3.Buildings and structures located within the High-Velocity Hurricane Zone shall comply with the provisions of Chapter 44 and, as applicable, Section R322 in flood hazard areas.

Wood foundations in Seismic Design Category D0, D1 or D2 shall be designed in accordance with accepted engineering practice.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5626_TextOfModification_1.png

This proposed modification reinstates guidance to applicable HVHZ sections of the code maintaining consistency with the legislative intent to preserve HVHZ wind provisions.

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Date Submitted	7/30/2012	**Section**	R401.2	**Proponent**	T Stafford
Chapter	4	**Affects HVHZ**	No	**Attachments**	No

General Comments No

Alternate Language No

Related Modifications

Summary of Modification

This proposal reinstates the foundation requirements from the 2010 FBCR.

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

This language was originally developed by a small work group established by the Florida Building Commission, after the limit for using the prescriptive construction provisions in the IRC (and FBCR) was lowered from 110 mph to 100 mph (ASCE 7-98 wind speed maps). It became apparant that the IRC was lacking in terms of prescriptive criteria for high wind regions and clarification on the limits of the prescritpive criteria within the IRC. The group was charged with developing and/or referencing specific prescriptive criteria for high wind regions in the FBCR. The work of this group was incorporated in the 2006 Supplement to the 2004 FBCR and has been carried forward in the 2007 and 2010 FBCR as well. The group also made an effort to clearly establish the limits of the prescriptive provisions in the IRC. This is one of a series of proposals that seeks to reinstate the provisions and criteria established by this work group.

This proposal reinstates the prescriptive provisions for foundations in high wind regions from the 2010 FBCR. These foundation requirements are also consistent with the foundation requirements in ICC 600.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5780 Text Modification

Page: 1

R401.2 Requirements. Foundations shall be capable of resisting all loads from roof uplift and building overturn. Foundation uplift for light-frame wood or steel buildings shall be calculated or determined from Table R401.1. Masonry buildings within the dimensional scope of Table R401.1 shall be assumed to be of adequate weight so as not to require uplift resistance greater than that provided by the structure and any normal foundation. Foundation construction shall also be capable of accommodating all gravity loads according to Section R301 and of transmitting the resulting loads to the supporting soil. Fill soils that support footings and foundations shall be designed, installed and tested in accordance with accepted engineering practice. Gravel fill used as footings for wood and precast concrete foundations shall comply with Section R403.

TABLE R401.1

FOUNDATION UPLIFT LIGHT STEEL & WOOD FRAME BUILDINGS IN EXPOSURE B (plf)[5, 6]

Roof Angle		Bldg Width	Minimum Building Length	V_{asd} as determined in accordance with Section R301.2.1.3 / Velocity Pressure					
				100	110	120	130	140	150
				15	18	22	26	30	34
		20	12	173	276	389	512	644	787
		25	14	73	165	265	374	492	618
		30	19	0	81	174	275	384	502
	3	35	25	17	48	104	200	305	417
	Stories[3]	40	35	33	69	109	152	240	349
		20	12	64	126	195	270	350	437
		25	15	17	66	129	198	272	352
45		30	22	38	62	90	146	217	294
	2	35	35	56	86	118	154	192	252
	Stories[2]	40	40	74	108	146	186	230	277
		20	12	33	46	61	94	132	173
		25	22	57	75	96	118	142	167
		30	18	79	103	129	157	187	219
	1	35	16	100	128	159	192	229	267
	Story[1]	40	16	120	152	188	226	268	312
		20	12	92	177	271	373	483	601
		25	17	0	63	143	230	324	425
		30	25	0	23	52	125	209	300
	3	35	35	13	44	78	115	154	206
	Stories[3]	40	40	28	64	102	145	190	239
		20	13	1	50	103	162	224	292
		25	23	16	35	57	84	139	199
30		30	30	36	60	87	116	148	181
	2	35	35	54	83	115	150	187	227
	Stories[2]	40	36	71	104	141	181	224	270
		20	20	32	46	60	76	93	112
		25	15	56	74	95	117	140	166
		30	13	78	102	127	155	185	217
	1	35	14	99	127	157	190	226	264
	Story[1]	40	16	118	150	185	223	264	308

TABLE R401.1 (continued)

Ro	Bld	Mini	V_{asd} as determined in accordance

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S5780 Text Modification

FOUNDATION UPLIFT LIGHT STEEL & WOOD FRAME BUILDINGS IN EXPOSURE B (plf)[5, 6]

Roof Angle		Bldg Width	Minimum Building Length[4]	V_{asd} as determined in accordance with Section R301.2.1.3 / Velocity Pressure					
				100	110	120	130	140	150
				15	18	22	26	30	34
		20	12	113	203	301	408	523	647
		25	14	45	130	222	322	431	547
	3 Stories[3]	30	17	4	85	177	277	385	501
		35	19	20	58	154	257	369	489
		40	21	35	72	141	249	367	493
		20	12	43	100	163	231	304	384
		25	13	22	79	143	214	289	371
20	2 Stories[2]	30	15	42	72	141	217	298	386
		35	15	61	92	150	232	321	417
		40	16	78	114	164	254	352	457
		20	12	38	57	94	135	179	226
		25	12	62	82	122	171	223	280
	1 Story[1]	30	12	85	110	154	212	275	342
		35	14	107	136	190	257	330	409
		40	16	126	160	227	304	388	478

TABLE R401.1

FOUNDATION UPLIFT LIGHT STEEL & WOOD FRAME BUILDINGS IN EXPOSURE C (plf)[5, 6]

Roof Angle		Bldg Width	Minimum Building Length[4]	V_{asd} as determined in accordance with Section R301.2.1.3 / Velocity Pressure					
				100	110	120	130	140	150
				21	26	31	36	42	48
		20	12	370	515	673	845	1031	1231
		25	13	249	377	518	670	836	1013
		30	17	159	278	408	550	703	867
	3 Stories[3]	35	21	89	203	328	463	610	767
		40	26	102	153	262	394	537	691
		20	12	184	271	368	472	585	706
		25	13	119	200	288	385	489	601
45		30	18	85	147	233	326	426	533
	2 Stories[2]	35	24	113	155	200	284	383	489
		40	36	139	187	240	297	358	457
		20	12	58	95	140	189	243	300
		25	16	92	118	147	178	224	281
		30	19	124	157	193	233	275	321
	1 Story[1]	35	17	154	193	236	283	334	388
		40	16	182	227	277	331	389	452
		20	12	256	376	507	650	804	970
		25	15	130	232	344	466	598	740
		30	21	47	127	228	337	455	582
30	3 Stories[3]	35	31	72	116	163	241	351	469
		40	40	96	146	200	259	323	392
	2 Stories[2]	20	12	95	163	238	320	408	502
		25	18	53	85	151	223	301	385

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		30	30	83	117	154	195	239	304
		35	35	110	150	195	244	296	353
		40	37	135	182	233	289	350	415
		20	20	58	76	97	119	143	169
		25	16	91	117	145	176	210	245
		30	13	123	156	191	230	272	317
	1	35	14	152	191	234	280	330	384
	Story[1]	40	16	179	224	273	327	384	446

TABLE R401.1(continued)

FOUNDATION UPLIFT LIGHT STEEL & WOOD FRAME BUILDINGS IN EXPOSURE C (plf)[5, 6]									Rf Angle	Bldg Width	Minimum Building Length[4]	V_{asd} as determined in accordance with Section R301.2.1.3 / Velocity Pressure
100	110	120	130	140	150							
21	26	31	36	42	48							
	20	12	285	411	549	698	860	1034				
	25	13	207	325	455	595	748	911				
3	30	15	162	280	409	549	701	863				
Stories[3]	35	17	138	260	393	538	695	863				
	40	18	124	252	392	545	709	886				
	20	12	152	233	320	416	519	630				
	25	12	133	215	306	404	511	625				
20 2	30	13	130	219	316	422	536	658				
Stories[2]	35	14	138	235	341	456	581	715				
	40	16	150	257	373	500	636	783				
	20	12	88	136	188	245	307	373				
	25	12	114	172	235	303	377	457				
1	30	12	146	214	288	370	457	552				
Story[1]	35	14	180	259	346	441	543	653				
	40	16	215	306	406	515	632	758				

Notes:

1. Based on 1st floor height = 10 ft. or 11 ft. floor to floor in multi-story.
2. Based on 2nd floor height = 8 ft. or 9 ft. floor to floor in multi-story.
3. Based on 3rd floor height = 8 ft.
4. Building length shall be equal to or greater than that shown in tables.
5. Roof and floor framing shall span in the same direction.
6. Includes provision for 2 foot roof overhang

R403.1.1 Minimum size. Minimum sizes for concrete and masonry footings shall be as set forth in Table R403.1 and Figure R403.1(1). Minimum sizes for concrete and masonry footings shall also be as required to provide adequate resistance to uplift and overturn of the building as determined from Table 401.1 or as calculated using engineered design in accordance with the Florida Building Code, Building. The footing width, W, shall be based on the load-bearing value of the soil in accordance with Table R401.4.1. Spread footings shall be at least 8 inches (203 mm) in thickness T. Footing projections, P, shall be at least 2 inches (51 mm) and shall not exceed the thickness of the footing. The size of footings supporting piers and columns shall be based on the tributary load and allowable soil pressure in accordance with Table R401.4.1. Footings for wood foundations shall be in accordance with the details set forth in Section R403.2, and Figures R403.1(2) and R403.1(3).

R403.1.2 Resistance to uplift. Uplift resistance of common foundations are given in Table R403.1.2. Uplift resistance of these foundations may be increased by increasing the size of the concrete footing. When determining

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the modified uplift resistance the added weight shall be reduced by multiplying by a factor of 0.6. Other foundation systems shall be engineered in accordance with the Florida Building Code, Building.

TABLE R403.1.2

FOUNDATION UPLIFT DESIGN DETAILS

FOOTING	TYPE	T	W	SLAB/WALL[1]	RESISTANCE	NOTES
A	Mono	20	12	6	502	3
	Mono	20	16	6	585	3
B	Mono Interior	20	12	13	796	3
	Mono Interior	20	16	13	879	3
C	12" Stem/Joist	10	20	228	436	1,2,3
D	Mono	20	12	6	502	--
	Mono	20	16	6	585	--
E	Mono Interior	20	12	13	796	--
	Mono Interior	20	16	13	879	--
F	Stem/Joist	10	20	--	208	2,3
G	Stem/Slab	10	20	6	460	3
H	Stem/Slab	10	12	6	377	3
	Stem/Slab	10	20	6	460	3

For SI: 1 inch = 25.4 mm.

1. Tributory width of 3½" slab or weight of stemwall and bond beam

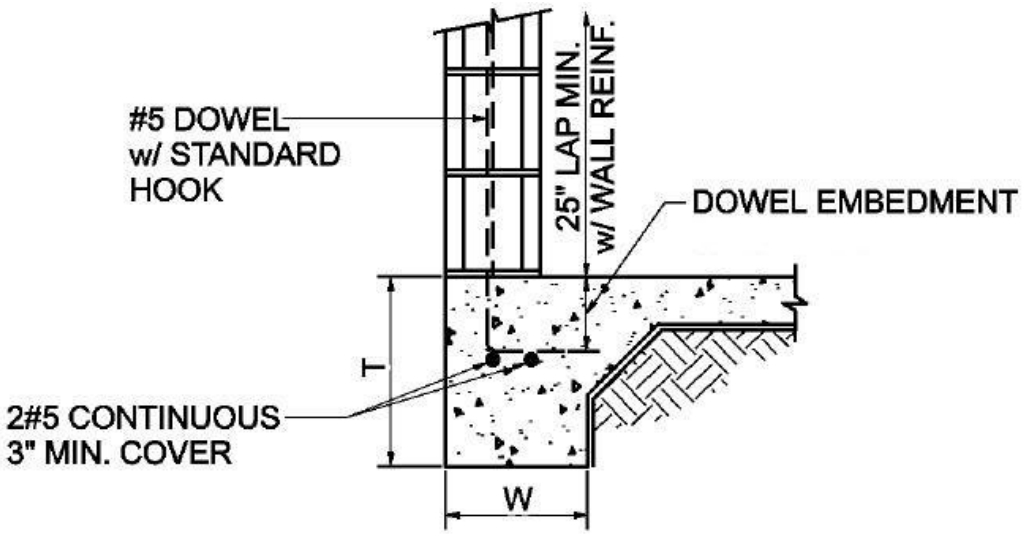
2. 1st floor dead load multiplied by 0.6 may also be included.

3. All footing dowel bars shall be same size as wall steel, shall have a standard 90-degree hook, and shall be embedded a minimum of 6 inches. Dowel bars shall lap vertical wall reinforcement a minimum of 25 inches.

Delete Figure R403.1(1) and replace with the following:

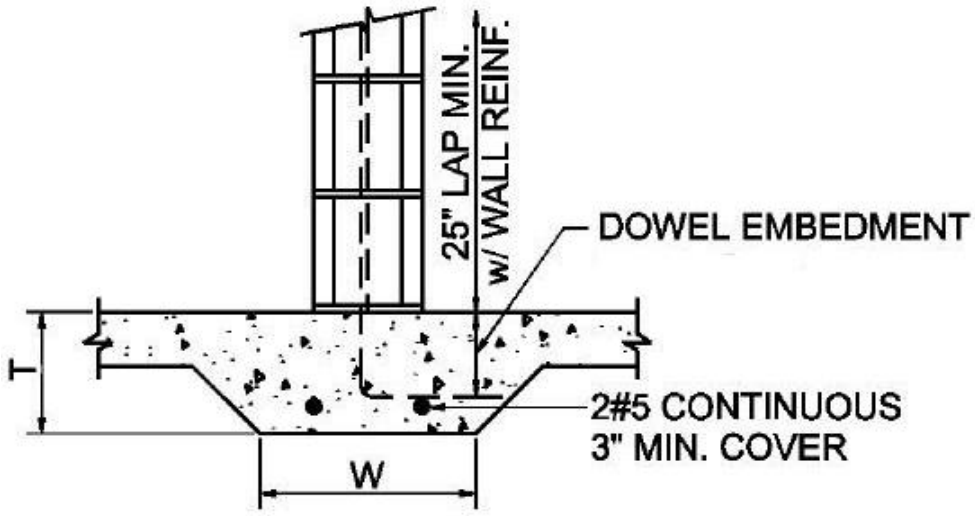
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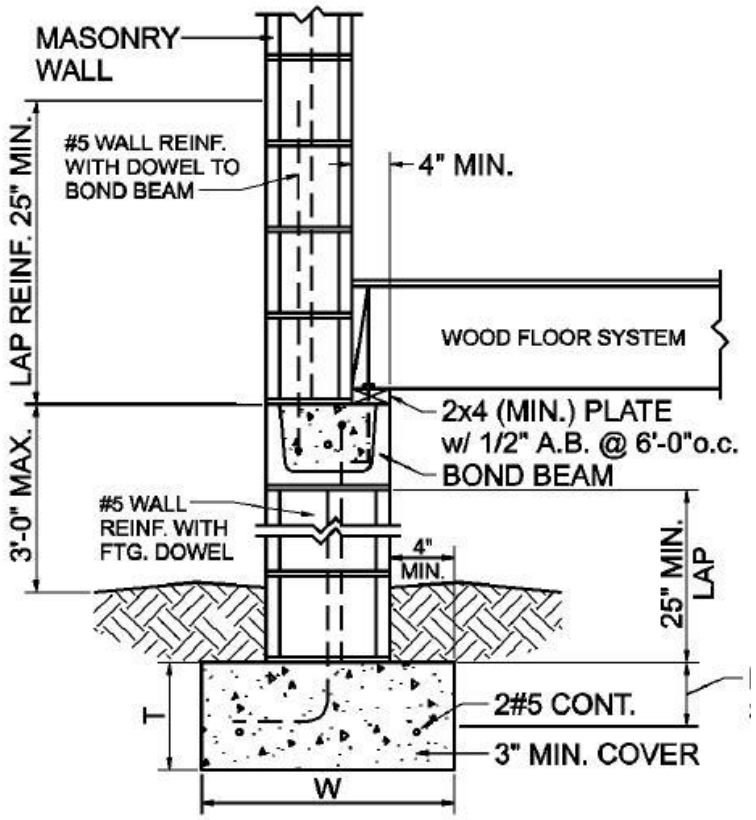
FOOTING A

MONOLITHIC SLAB ON GRADE EXTERIOR WALL



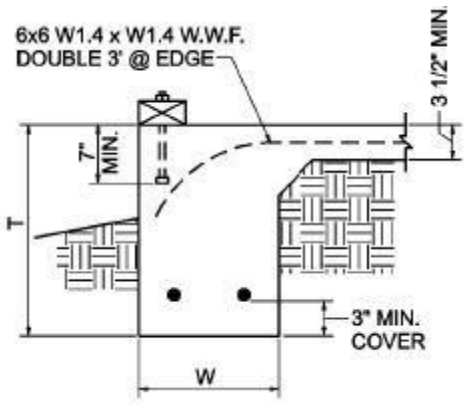
FOOTING B

MONOLITHIC SLAB ON GRADE INTERIOR WALL



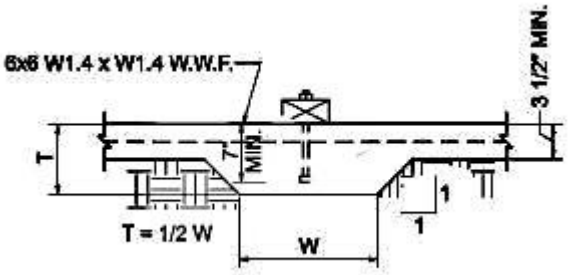
FOOTING C

STEM WALL WOOD JOIST FLOOR



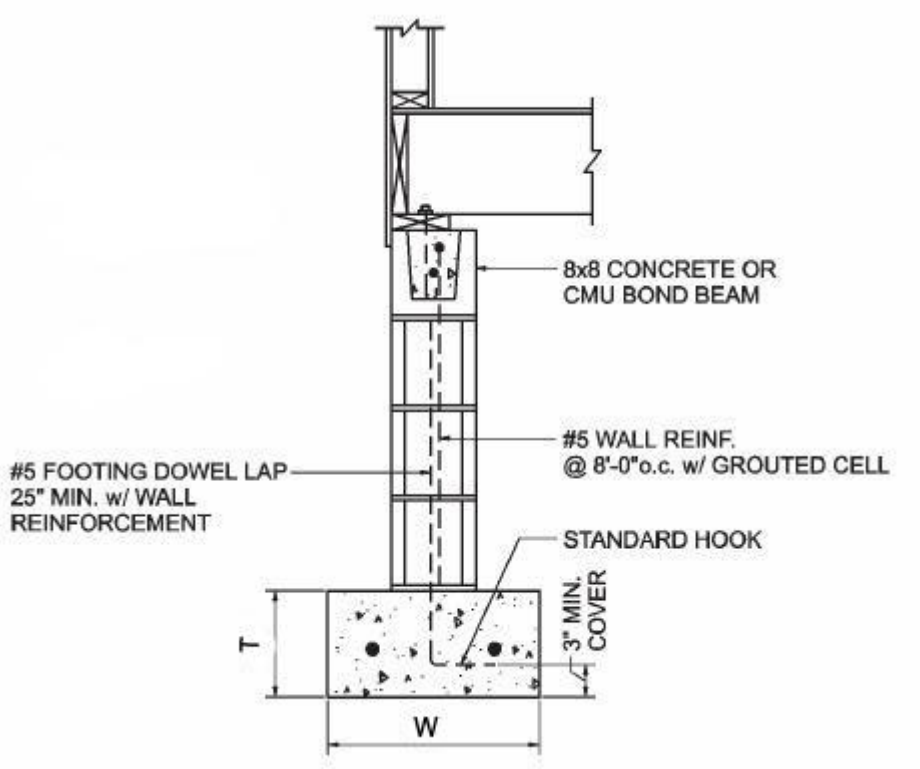
Footing D

Monolithic Exterior Footing



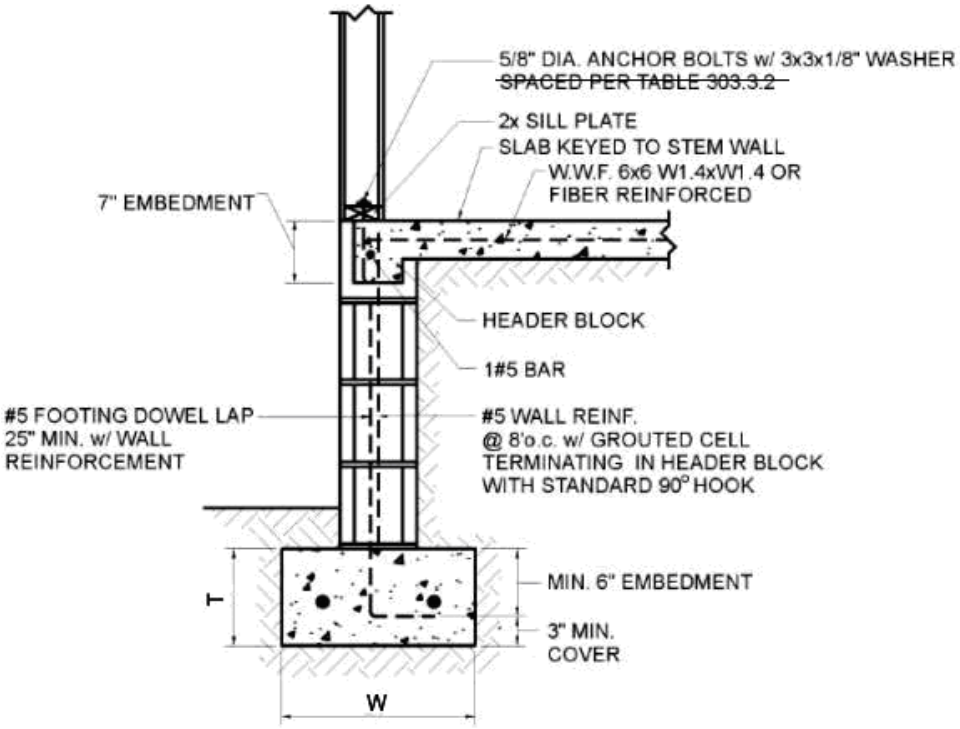
Footing E

Monolithic Interior Footing



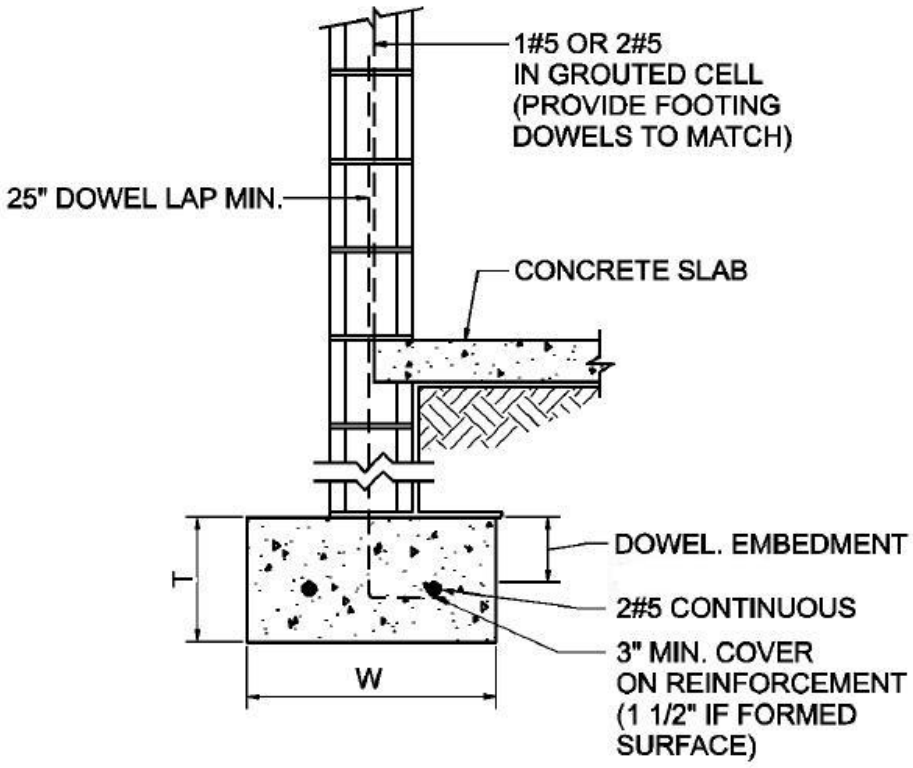
Footing F

Wood Floor to Concrete or Masonry Stemwall



Footing G

Stemwall Foundation with Slab-on-Grade


1#5 OR 2#5
IN GROUTED CELL
(PROVIDE FOOTING
DOWELS TO MATCH)
25" DOWEL LAP MIN.
CONCRETE SLAB
DOWEL. EMBEDMENT
T
2#5 CONTINUOUS
3" MIN. COVER
ON REINFORCEMENT
(1 1/2" IF FORMED
SURFACE)
W

FOOTING H

Date Submitted	7/24/2012	**Section**	R501.1	**Proponent**	Michael Goolsby
Chapter	5	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

The provisions contained in this chapter have unique specifications for application in the HVHZ. The beginning of the chapter needs to refer the reader to Chapter 44 for the applicable HVHZ requirements.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. It provides clarity and direction in the code.

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

No impact. It provides clarity and direction in the code.

Impact to industry relative to the cost of compliance with code

Cost savings by providing clarity and direction in the code.

Requirements

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

None. The MOD provides direction and clarity for applicable HVHZ requirements.

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

Strengthens the code by providing clarity and direction when working in the HVHZ.

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

The modification does not discriminate against materials, products, methods or systems of construction.

Does not degrade the effectiveness of the code

This modification enhances the code by directing users to the proper chapter of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5627-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

This change is not necessary as Section R301.1 directs users to the provisions of Chapter 44 for structures located in the High Velocity Hurricane Zone.

R501.1 Application. The provisions of this chapter shall control the design and construction of the floors for all buildings including the floors of attic spaces used to house mechanical or plumbing fixtures and equipment.

Exception: Buildings and structures located within the High-Velocity Hurricane Zone shall comply with the provisions of Chapter 44.

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This proposed modification reinstates guidance to applicable HVHZ sections of the code maintaining consistency with the legislative intent to preserve HVHZ wind provisions.

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Date Submitted	8/2/2012	**Section**	R502	**Proponent**	T Stafford
Chapter	5	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Deletes the prescriptive wood framing construction provisions that do not apply to high wind areas.

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

The basis for this proposal was originally developed by a small work group established by the Florida Building Commission, after the limit for using the prescriptive construction provisions in the IRC (and FBCR) was lowered from 110 mph to 100 mph (ASCE 7-98 wind speed maps). It became apparent that the IRC was lacking in terms of prescriptive criteria for high wind regions and clarification on the limits of the prescriptive criteria within the IRC. The group was charged with developing and/or referencing specific prescriptive criteria for high wind regions in the FBCR. The work of this group was incorporated in the 2006 Supplement to the 2004 FBCR and has been carried forward in the 2007 and 2010 FBCR as well. The group also made an effort to clearly establish the limits of the prescriptive provisions in the IRC. This is one of a series of proposals that seeks to reinstate the provisions and criteria established by this work group.

This proposal clearly establishes the limits of the non-high wind provisions of the IRC by deleting the provisions that do not apply to Florida. This reduces the potential for confusion regarding the applicable provisions of the residential code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R502.1.8 ~~**R502.12**~~ **Draftstopping required.** Draftstopping shall be provided in accordance with Section R302.12.

R502.1.9 ~~**R502.13**~~ **Fireblocking required.** Fireblocking shall be provided in accordance with Section R302.11.

R502.1.10 ~~**R502.11**~~ **Wood trusses**

R502.1.10.1 ~~**R502.11.1**~~ **Design.** Wood trusses shall be designed in accordance with approved engineering practice. The design and manufacture of metal plate connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by a registered professional where required by Florida Statutes. ~~the statutes of the jurisdiction in which the project is to be constructed in accordance with Section R106.1.~~

R502.1.10.2 ~~**R502.11.2**~~ **Bracing.** Trusses shall be braced to prevent rotation and provide lateral stability in accordance with the requirements specified in the construction documents for the building and on the individual truss design drawings. In the absence of specific bracing requirements, trusses shall be braced in accordance with TPI/WTCA BCSI ~~accepted industry practices , such as the Building Component Safety Information (BCSI) Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses~~.

R502.1.10.3 ~~**R502.11.3**~~ **Alterations to trusses.** [No change to text].

R502.1.10.4 ~~**R502.11.4**~~ **Truss design drawings.** Truss design drawings, prepared in compliance with Section R502.1.3.1, shall be provided to the building official and approved prior to installation. Truss design drawing shall be provided with the shipment of trusses delivered to the job site. Truss design drawings shall include, at a minimum, the information specified below: [No change to remainder of text]

R502.1.11 ~~**R502.8**~~ **Cutting, drilling and notching.** Structural floor members shall not be cut, bored or notched in excess of the limitations specified in this section. See Figure R502.1.11 ~~R502.8.~~

FIGURE R502.1.11 ~~**R502.8**~~ **CUTTING, NOTCHING and DRILLING.** [No other change to IRC Figure R502.8]

R502.1.11.1 ~~**R502.8.1**~~ **Sawn lumber.** [No change to IRC R502.8.1 text]

R502.1.11.2 ~~**R502.8.2**~~ **Engineered wood products.** [No change to IRC R502.8.2 text]

R502.2 Design and construction. Floor framing of light-frame wood construction shall be designed and constructed in accordance with the provisions of Section R301.2.1.1 or in accordance with the AF&PA NDS. Floor framing of light-frame wood construction shall also comply with Sections R319, R320, and R502.1. ~~Floors shall be designed and constructed in accordance with the provisions of this Chapter, Figure R502.2 and Sections R317 and R318 or in accordance with AF&PA/ NDS.~~

The remainder of Section R502.2 is to be deleted and "Reserved."

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S6ooo

Date Submitted	8/2/2012	**Section**	R505	**Proponent**	T Stafford
Chapter	5	**Affects HVHZ**	No	**Attachments**	No

General Comments No

Alternate Language No

Related Modifications

Summary of Modification

Deletes the prescriptive steel framing construction provisions that do not apply to high wind areas.

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S6000 Text Modification

SECTION R505

STEEL FLOOR FRAMING

RESERVED

Reserve Section 505 in it's entirety.

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Date Submitted	8/1/2012	**Section**	606.16	**Proponent**	Jim Heise
Chapter	6	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Masonry opening tolerances

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

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

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

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

Contributes to public health, safety and welfare by clarifying responsibilty of opening requirements.

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

This will improve the code by reinstating these standards that exist in the Florida Code with the current edition.

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5950 Text Modification

Masonry Opening Tolerances. Masonry rough openings may vary in the cross section dimension or elevation dimension specified on the approved plans from - 1/4 inchs (6.4 mm) to + 1/2 inches (12.7 mm). For exterior window and door installation provisions see Sections R612.11 and R612.12.

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S5960

Date Submitted	8/1/2012	**Section**	612.12.2	**Proponent**	Jim Heise
Chapter	6	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

maximum sealant joints for Masonry Rough Openings

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

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

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

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

Carried over from the previous code. Field tested and proven to be effective.

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

Carried over from the previous code. Field tested and proven to be effective.

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5960 Text Modification

R612.12.2 Masonry Rough Openings. Masonry rough opening dimensions shall be within the tolerances specified at Section R606.16 and in addition shall provide for a window perimeter sealant joint a maximum of 1/4 inches in width.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5960_TextOfModification_1.png

Date Submitted	8/1/2012	**Section**	612.12	**Proponent**	Jim Heise
Chapter	6	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Flashing, sealants and weatherstripping

Rationale

Refers to the FMA/AAMA documents applied within the other sections of this code

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

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

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

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

It does so by ensuring direction to applicable sections of the code are provided.

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

It does so by ensuring direction to applicable sections of the code are provided.

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

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5956 Text Modification

add the following language as per 2010 FBCR ...

R612.12 Flashing, sealants and weatherstripping. Flashing and sealants for exterior windows and doors shall comply with Section R703.8

Page: 1

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Date Submitted	8/1/2012	**Section**	612.1	**Proponent**	Jim Heise
Chapter	6	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Exterior window and door flashing

Rationale

Language carried over from the 2010 Code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

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

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

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

Carried over from the previous code. Field tested and proven to be effective.

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

This will improve the code by reinstating these standards that exist in the Florida Code with the current edition.

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

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R612.1 General.

This section prescribes performance and construction requirements for exterior windows and doors installed in walls. Windows ~~and doors~~ shall be installed ~~and flashed~~ in accordance with the fenestration manufacturer's written installation instructions. Window and door openings shall be flashed in accordance with Section R703.8. Written installation instructions shall be provided by the ~~fenestration~~ manufacturer ~~for each window or door.~~

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S5953

Date Submitted	8/1/2012	**Section**	612.2	**Proponent**	Jim Heise
Chapter	6	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

performance criteria for windows and doors

Rationale

This proposal simply clarifies that the design pressures determined from ASCE 7 can be multiplied by 0.6 for testing protocols that are based on allowable or nominal wind loads. This explanation is not in the base code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

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

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

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

Carried over from the previous code.

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

Carried over from the previous code.

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

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

sunmitting to put back in R612.5 from 2010 FBCR ...

Exterior windows and doors shall be designed to resist the design wind loads specified in Table R301.2(2) adjusted for height and exposure in accordance with Table R301.2(3). For testing required in Sections R616.6, R612.7, and R612.8, designed pressures determined from table R301.2(2) or ASCE 7 are permitted to be multiplied by 0.6.

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S4972

Date Submitted	7/6/2012	**Section**	R601.1	**Proponent**	Michael Goolsby
Chapter	6	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Reinstate a code section erroneously removed

Rationale

This modification is intended to reinstate a provision which was erroneously omitted from the 2010 FBC during the compilation and printing process. This provision previously appeared in the 2007 edition of the FBC and was unintentionally and improperly removed without a submitted modification of deletion.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Removes confusion regarding application of applicable code sections.

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

Removes confusion regarding application of applicable code sections.

Impact to industry relative to the cost of compliance with code

Removes confusion regarding application of applicable code sections.

Requirements

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

It does so by ensuring direction to applicable sections of the code are provided.

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

It does so by ensuring direction to applicable sections of the code are provided.

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

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Does not degrade the effectiveness of the code

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S4972-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

This change is not necessary as Section R301.1 directs users to the provisions of Chapter 44 for structures located in the High Velocity Hurricane Zone.

S4972 Text Modification

R601.1 Application. The provisions of this chapter shall control the design and construction of all walls and partitions for all buildings.

Exception: Buildings and structures located within the High-Velocity Hurricane Zone shall comply with the provisions of Chapter 44.

Page: 1

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The purpose of the proposed modification is to reinstate a HVHZ section which should not have been removed. The code section complies with the legislative intent that wind related HVHZ provision be maintained as a Florida specific.

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Date Submitted	8/2/2012	**Section**	R602	**Proponent**	T Stafford
Chapter	6	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Deletes the prescriptive wood framing construction provisions for wall framing that do not apply to high wind areas.

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

The basis for this proposal was originally developed by a small work group established by the Florida Building Commission, after the limit for using the prescriptive construction provisions in the IRC (and FBCR) was lowered from 110 mph to 100 mph (ASCE 7-98 wind speed maps). It became apparent that the IRC was lacking in terms of prescriptive criteria for high wind regions and clarification on the limits of the prescriptive criteria within the IRC. The group was charged with developing and/or referencing specific prescriptive criteria for high wind regions in the FBCR. The work of this group was incorporated in the 2006 Supplement to the 2004 FBCR and has been carried forward in the 2007 and 2010 FBCR as well. The group also made an effort to clearly establish the limits of the prescriptive provisions in the IRC. This is one of a series of proposals that seeks to reinstate the provisions and criteria established by this work group.

This proposal clearly establishes the limits of the non-high wind provisions of the IRC by deleting the provisions that do not apply to Florida. This reduces the potential for confusion regarding the applicable provisions of the residential code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to building and property owners relative to cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5986 Text Modification

Page: 1

R602.2 General requirements ~~Grade.~~ ~~Studs shall be a minimum No. 3, standard or stud grade lumber. Exception: Bearing studs not supporting floors and nonbearing studs may be utility grade lumber, provided the studs are spaced in accordance with Table R602.3(5).~~

R602.2.1 ~~R602.8~~ Fireblocking required. Fireblocking shall be providedin accordance with Section R302.11.

R602.2.2 ~~R602.7.3~~ Nonbearing walls. Load-bearing headers are not required in interior or exterior nonbearing walls. A single flat 2-inch-by-4-inch (51 mm by 102 mm) member may be used as a header in interior or exterior nonbearing walls for openings up to 8 feet (2438 mm) in width if the vertical distance to the parallel nailing surface above is not more than 24 inches (610 mm). For such nonbearing headers, no cripples or blocking are required above the header.

> **R602.2.2.1 ~~R602.5~~ Interior nonbearing walls.** Interior nonbearing walls shall be permitted to be constructed with 2-inch-by-3-inch (51 mm by 76 mm) studs spaced 24 inches (610 mm) on center or, when not part of a braced wall line, 2-inch-by-4-inch (51 mm by 102 mm) flat studs spaced at 16 inches (406 mm) on center. Interior nonbearing walls shall be capped with at least a single top plate. Interior nonbearing walls shall be fireblocked in accordance with Section R302.11 ~~R602.8~~.

R602.2.3 ~~R602.6~~ Drilling and notching--studs. Drilling and notching of studs shall be in accordance with the following:

1. Notching. Any stud in an exterior wall or bearing partition may be cut or notched to a depth not exceeding 25 percent of its width. Studs in nonbearing partitions may be notched to a depth not to exceed 40 percent of a single stud width.

2. Drilling. Any stud may be bored or drilled, provided that the diameter of the resulting hole is no more than 60 percent of the stud width, the edge of the hole is no more than 5/8 inch (16 mm) to the edge of the stud, and the hole is not located in the same section as a cut or notch. Studs located in exterior walls or bearing partitions drilled over 40 percent and up to 60 percent shall also be doubled with no more than two successive doubled studs bored. See Figures R602.2.3(1) and R602.2.3(2) [IRC Figures R602.6(1) and R602.6(2)].

Exception: Use of approved stud shoes is permitted when they are installed in accordance with the manufacturer's recommendations.

R602.2.3.1 ~~R602.6.1~~ Drilling and notching of top plate. When piping or ductwork is placed in or partly in an exterior wall or interior load-bearing wall, necessitating cutting, drilling or notching of the top plate by more than 50 percent of its width, a galvanized metal tie not less than 0.054 inch thick (1.37 mm) (16 ga) and 11/2 inches (38 mm) wide shall be fastened across and to the plate at each side of the opening with not less than eight 10d (0.148 inch diameter) having a minimum length of 1½ inches (38 mm) at each side or equivalent. The metal tie must extend a minimum of 6 inches past the opening. See Figure R602.2.3.1 [IRC Figure R602.6.1].

> **Exception:** When the entire side of the wall with the notch or cut is covered by wood structural panel sheathing.

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R602.3 Design and construction. Exterior walls of light-frame wood construction shall be designed and constructed in accordance with the provisions of Section R301.2.1.1 or in accordance with the AF&PA NDS. Exterior walls of light-frame wood construction shall also comply with Section R602.1. and R602.2.

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S6001

Date Submitted	8/2/2012	**Section**	R603	**Proponent**	T Stafford
Chapter	6	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Deletes the prescriptive steel framing construction provisions that do not apply to high wind areas.

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Section R301.2.1.1 in the 2010 FBCR requires compliance with AISI S230 for steel frame construction where Vult equals or exceeds 115 mph. Vult exceeds 115 mph for the entire state of Florida for Risk Category II buildings.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to building and property owners relative to cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S6001 Text Modification

SECTION R603

STEEL WALL FRAMING

RESERVED

Reserve Section 505 in it's entirety.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_6001_TextOfModification_1.png

S6017

Date Submitted	8/2/2012	**Section**	R606; R614	**Proponent**	Joseph Belcher
Chapter	6	**Affects HVHZ**	No	**Attachments**	Yes

General Comments No

Alternate Language No

Related Modifications

None

Summary of Modification

Adds prescriptive provisions suitable for Florida's wind loads as contained in previous editions of the FBCR for concrete masonry construction.

Rationale

The code as adopted does not contain prescriptive structural provisions which may be used in the State of Florida. The proposed modifications provide prescriptive provisions for the construction of masonry structures for the various basic wind speeds and exposure categories prevalent in the state. The provisions are based on the latest edition of nationally recognized standards.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on cost to enforce. Provisions have been in code for years.

Impact to building and property owners relative to cost of compliance with code

The proposed changes do not have a fiscal impact on property owners unless to reduce the costs of construction by providing clear and concise prescriptive means for code compliance.

Impact to industry relative to the cost of compliance with code

The proposed changes do not have a fiscal impact on the construction industry unless to reduce the costs of plan review and inspection by providing clear and concise prescriptive means for code compliance.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

The proposal has a reasonable and substantial connection with the health, safety, and welfare of the general public by providing prescriptive methods of complying with the code provisions regarding wind resistance of residential structures

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

The proposal strengthens and improves the code by providing prescriptive construction methods for the construction of wind resistant residential structures within the State for Florida

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

The proposal addresses sections of the code related to masonry construction and does not discriminate against materials, products, methods or systems of construction.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code by providing prescriptive methods for building wind resistant masonry dwellings in the State of Florida.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

See uploaded support file.

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Proposed Modification to the Florida Building Code

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Fax: Code: Florida Building Code, Residential
Section No.: R202; R614

Text of Modification [additions underlined; deletions ~~stricken~~]:

R606.2 Thickness of masonry. The minimum nominal thickness of exterior concrete masonry walls shall be 8 inches or shall be designed in accordance with Section R606.1. ~~The nominal thickness of masonry walls shall conform to the requirements of Sections R606.2.1 through R606.2.4.~~

R606.2.1 Minimum thickness. Reserved. ~~The minimum thickness of masonry bearing walls more than one story high shall be 8 inches (203 mm). Solid masonry walls of one-story dwellings and garages shall not be less than 6 inches (152 mm) in thickness when not greater than 9 feet (2743 mm) in height, provided that when gable construction is used, an additional 6 feet (1829mm) is permitted to the peak of the gable. Masonry walls shall be laterally supported in either the horizontal or vertical direction at intervals as required by Section R606.9.~~

R606.2.2 Reserved. ~~Rubble stone masonry wall. The minimum thickness of rough, random or coursed rubble stone masonry walls shall be 16 inches (406 mm).~~

R606.2.3 Change in thickness. Where walls of masonry of hollow units or masonry-bonded hollow walls are decreased in thickness, a course of *solid masonry* shall be constructed between the wall below and the thinner wall above, or special units or construction shall be used to transmit the loads from face shells or wythes above to those below.

R606.2.4 Parapet walls. Unreinforced *solid masonry* parapet walls shall not be less than 8 inches (203 mm) in thickness and their height shall not exceed four times their thickness. Unreinforced hollow unit masonry parapet walls shall be not less than 8 inches (203 mm) thick, and their height shall not exceed three times their thickness. Masonry parapets in areas subject to wind loads ~~of 30 pounds per square foot (1.44 kN/m^2),~~ shall be reinforced in accordance with ACI 530/ASCE 5/TMS 402. Masonry parapets located in Seismic Design Category D0, D1 or D2, or on townhouses in Seismic Design Category C shall be reinforced in accordance with Section R606.12.

R606.5 ~~Allowable stresses Allowable compressive stresses in masonry shall not exceed the values prescribed in Table R606.5.~~ Concrete masonry units shall be hollow or solid unit masonry in accordance with ASTM C 90 and shall have a minimum net area compressive strength of 1900 psi in compliance with ASTM C 90. Mortar shall comply with Section R607.1. In determining the stresses in masonry, the effects of all loads and conditions of loading and the influence of all forces affecting the design and strength of the several parts shall be taken into account.

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R606.6 Piers. Reserved. ~~The unsupported height of masonry piers shall not exceed ten times their least dimension. When structural clay tile or hollow concrete masonry units are used for isolated piers to support beams and girders, the cellular spaces shall be filled solidly with concrete or Type M or S mortar, except that unfilled hollow piers may be used if their unsupported height is not more than four times their least dimension. Where hollow masonry units are solidly filled with concrete or Type M, S or N mortar, the allowable compressive stress shall be permitted to be increased as provided in Table R606.5.~~

R606.6.1 Pier cap. Hollow piers shall be capped with 4 inches (102 mm) of *solid masonry* or concrete, a masonry cap block, or shall have cavities of the top course filled with concrete or grout, or other *approved* methods.

R606.8 ~~Stack b~~ Bond. Masonry walls shall be running bond or stack bond construction. ~~In unreinforced masonry where masonry units are laid in stack bond, longitudinal reinforcement consisting of not less than two continuous wires each with a minimum aggregate cross-sectional area of 0.017 square inch (11 mm^2) shall be provided in horizontal bed joints spaced not more than 16 inches (406 mm) on center vertically.~~

R606.8.1 Joint reinforcement stack bond. When masonry units are laid in stack bond, horizontal joint reinforcement shall be placed in bed joints at not more than 16 inches on center. Horizontal joint reinforcement shall be a minimum of 9-gage and shall be in addition to required vertical reinforcement. Joint reinforcement shall be embedded in accordance with R606.9.6.

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TABLE R606.5
ALLOWABLE COMPRESSIVE STRESSES FOR EMPIRICAL DESIGN OF MASONRY

CONSTRUCTION; COMPRESSIVE STRENGTH OF UNIT, GROSS AREA	ALLOWABLE COMPRESSIVE STRESSES[a] GROSS CROSS-SECTIONAL AREA[b]	
	Type M or S Mortar	Type N mortar
Solid masonry of brick and other solid units of clay or shale; sand-lime or concrete brick:		
8,000 + psi	350	300
4,500 psi	225	200
2,500 psi	160	140
1,500 psi	115	100
Grouted[c] masonry, of clay or shale; sand-lime or concrete:		
[illegible]	225	200
2,500 psi	160	140
1,500 psi	115	100
Solid masonry of solid concrete masonry units:		
3,000+ psi	225	200
2,000 psi	160	140
1,200 psi	115	100
Masonry of hollow load-bearing units:		
2,000+ psi	140	120
1,500 psi	115	100
1,000 psi	75	70
700 psi	60	55
Hollow walls (cavity or masonry bonded[d]) solid units:		
2,500+ psi	160	140
1,500 psi	115	100
Hollow units	75	70
Stone ashlar masonry:		
Granite	720	640

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Limestone or marble	450	400
Sandstone or cast stone	360	320
Rubble stone masonry:		
Coarse, rough or random	120	100

For SI: 1 pound per square inch = 6.895 kPa.

a. Linear interpolation shall be used for determining allowable stresses for masonry units having compressive strengths that are intermediate between those given in the table.

b. Gross cross-sectional area shall be calculated on the actual rather than nominal dimensions.

c. See Section R608.

d. Where floor and roof loads are carried upon one wythe, the gross cross-sectional area is that of the wythe under load; if both wythes are loaded, the gross cross-sectional area is that of the wall minus the area of the cavity between the wythes. Walls bonded with metal ties shall be considered as cavity walls unless the collar joints are filled with mortar or grout.

R606.9 Lateral support. Masonry walls shall be laterally supported in either the horizontal or the vertical direction. The maximum spacing between lateral supports shall not exceed the distances in Table R606.9. Lateral support shall be provided by cross walls, pilasters, buttresses or structural frame members when the limiting distance is taken horizontally, or by floors or roofs when the limiting distance is taken vertically.

TABLE R606.9
SPACING OF LATERAL SUPPORT FOR MASONRY WALLS

a. Except for cavity walls and cantilevered walls, the thickness of a wall shall be its nominal thickness measured perpendicular to the face of the wall. For cavity walls, the thickness shall be determined as the sum of the nominal thicknesses of the individual wythes. For cantilever walls, except for parapets, the ratio of height to nominal thickness shall not exceed 6 for solid masonry, or 4 for hollow masonry. For parapets, see Section R606.2.4.

b. An additional unsupported height of 6 feet is permitted for gable end walls.

R606.9.1 Horizontal lateral support. Lateral support in the horizontal direction provided by intersecting masonry walls shall be provided by one of the methods in Section R606.9.1.1 or Section R606.9.1.2.

R606.9.1.1 Bonding pattern. Fifty percent of the units at the intersection shall be laid in an overlapping masonry bonding pattern, with alternate units having a bearing of not less than 3 inches (76 mm) on the unit below.

R606.9.1.2 Metal reinforcement. Interior nonloadbearing walls shall be anchored at their intersections, at vertical intervals of not more than 16 inches (406 mm) with joint reinforcement of at least 9 gage [0.148 inch (4mm)], or 1/4-inch (6 mm) galvanized mesh hardware

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~~cloth. Intersecting masonry walls, other than interior nonloadbearing walls, shall be anchored at vertical intervals of not more than 8 inches (203 mm) with joint reinforcement of at least 9 gage and shall extend at least 30 inches (762 mm) in each direction at the intersection. Other metal ties, joint reinforcement or anchors, if used, shall be spaced to provide equivalent area of anchorage to that required by this section.~~

~~R606.9.2 Vertical lateral support. Vertical lateral support of masonry walls in Seismic Design Category A, B or in Section R606.9.2.1 or Section R606.9.2.2.~~

~~R606.9.2.1 Roof structures. Masonry walls shall be anchored to roof structures with metal strap anchors spaced in accordance with the manufacturer's instructions, 1/2-inch (13 mm) bolts spaced not more than 6 feet (1829 mm) on center, or other approved anchors. Anchors shall be embedded at least 16 inches (406 mm) into the masonry, or be hooked or welded to bond beam reinforcement placed not less than 6 inches (152 mm) from the top of the wall.~~

~~R606.9.2.2 Floor diaphragms. Masonry walls shall be anchored to floor diaphragm framing by metal strap anchors spaced in accordance with the manufacturer's instructions, 1/2-inch-diameter (13 mm) bolts spaced at intervals not to exceed 6 feet (1829 mm) and installed as shown in Figure R606.11(1), or by other approved methods.~~

~~R606.10 Lintels. Masonry over openings shall be supported by steel lintels, reinforced concrete or masonry lintels or masonry arches, designed to support load imposed.~~

~~R606.11 Anchorage. Masonry walls shall be anchored to floor and roof systems in accordance with the details shown in Figure R606.11(1), R606.11(2) or R606.11(3). Footings may be considered as points of lateral support.~~

R606.9 ~~13~~ ~~Protection for r~~ Reinforcement. Reinforcing steel shall be a minimum of Grade 60 No. 5 or No. 4 bars and shall be identified in an approved manner. ~~All bars shall be completely embedded in mortar or grout. Joint reinforcement embedded in horizontal mortar joints shall not have less than $^{5}/_{8}$-inch (15.9 mm) mortar coverage from the exposed face. All other reinforcement shall have a minimum coverage of one bar diameter over all bars, but not less than 3/4 inch (19.1 mm), except where exposed to weather or soil, in which case the mini-mum coverage shall be 2 inches (51 mm).~~

R606.9.1Bundling. Bundling shall be permitted when two bars are required at the same location in a wall or in a bond beam.

R606.9.2 Splicing. Splices shall be lap splices. Non-contact lap splices shall be permitted provided reinforcing bars are not spaced farther apart than 5 inches. Splice lengths shall be in accordance with Table R606.9.2. and shall be a minimum of 25 inches for No. 5 bars

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and 20 inches for No. 4 bars.

TABLE R606.9.2
LAP SPLICE
LENGTHS

Bar Size (No.)	Lap Length (in.)
3	15
4	20
5	25
6	42
7	59

R606.9.3 Bending. Reinforcement shall be bent in the shop or in the field. All reinforcement shall be bent cold. The diameter of the bend, measured on the inside of the bar, shall not be less than six-bar diameters. Reinforcement partially embedded in concrete shall not be field bent.

EXCEPTION: Where bending is necessary to align dowel bars with a vertical cell, bars partially embedded in concrete shall be permitted to be bent at a slope of not more than 1 inch of horizontal displacement to 6 inches of vertical bar length.

R606.9.4 Clearance from masonry. Reinforcing bars embedded in grouted masonry cells shall have a minimum clear distance between reinforcing bars and any face of a cell of ¼-inch for fine grout or ½-inch for coarse grout.

R606.9.5 Cover for reinforcing steel. Reinforcing bars used in masonry walls shall have a masonry cover, including grout, of not less than 2 inches for masonry units with face exposed to earth or weather and 1½-inch for masonry units not exposed to earth or weather.

R606.9.6 Joint reinforcement embedment. Longitudinal wires of joint reinforcement shall be fully embedded in mortar or grout with a minimum cover of ⅝- inch when exposed to earth or weather and ½-inch when not exposed to earth or weather.

R606.9.7 Cleanout openings. Cleanout openings shall be provided for cells containing spliced reinforcement when the grout pour exceeds 5 feet in height. Where cleanout openings are required, an opening shall be provided in the bottom course of the masonry cell to be filled. Cleanout openings shall have a minimum opening dimension of 3 inches.

R606.9.8 Termination. All vertical wall reinforcement shall be terminated by hooking into a bond beam or footing with a standard hook. Standard hooks shall be formed by bending the vertical wall reinforcement in accordance with Section R606.9.3 or shall be a prefabricated standard hook. Splices to standard hooks shall be lap splices with the minimum extension length beyond the bend for standard hooks of 10 inches for No. 5 bars and 8 inches for No. 4 bars. Hooks at bond beams shall extend to the uppermost horizontal reinforcement of the bond beam and shall be embedded a minimum of 6 inches into the bond beam as detailed in Figure R606.9a and Figure R606.9b. Where multiple bars are required, a single standard hook shall terminate into the bond beam or footing. In narrow footings where the width is insufficient to accommodate a standard 90-degree hook and provide the concrete cover required by Table 1907.7.1 of the Florida Building Code,

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Building, the hook shall be rotated in the horizontal direction until the required concrete cover is achieved.

R606.9.9 Continuity multi-story construction. Vertical wall reinforcement in multi-story construction shall extend through bond beams and shall be continuous with the vertical wall reinforcement of the wall above or be offset in accordance with Section R606.9.9.1 and Figure R606.9.9B

Exception: Where more than one bar in the same cell is required for vertical wall reinforcement, only one bar shall be required to be continuous between stories.

R606.9.9.1 Offset reinforcement. Vertical reinforcement shall be permitted to be offset between floor levels. Reinforcement for the lower story shall be anchored into the upper floor level bond beam and reinforcement for the upper story shall be anchored into the bond beams above and below in accordance with Section R606.9.8 and Figures R606.9A and R606.9B.

R606.9.10 ~~R606.14~~ Metal Accessories. Joint reinforcement, anchors, ties and wire fabric shall conform to the following: ASTM A 82 for wire anchors and ties; ASTM A 36 for plate, headed and bent-bar anchors; ASTM A 510 for corrugated sheet metal anchors and ties; ASTM A 951 for joint reinforcement; ASTM B 227 for copper-clad steel wire ties; or ASTM A 167 for stain-less steel hardware.
R606.~~14~~ 10.10.1 Corrosion protection. Minimum corrosion protection of joint reinforcement, anchor ties and wire fabric for use in masonry wall construction shall conform to Table ~~R606.14.1.~~ R606.9.10.1

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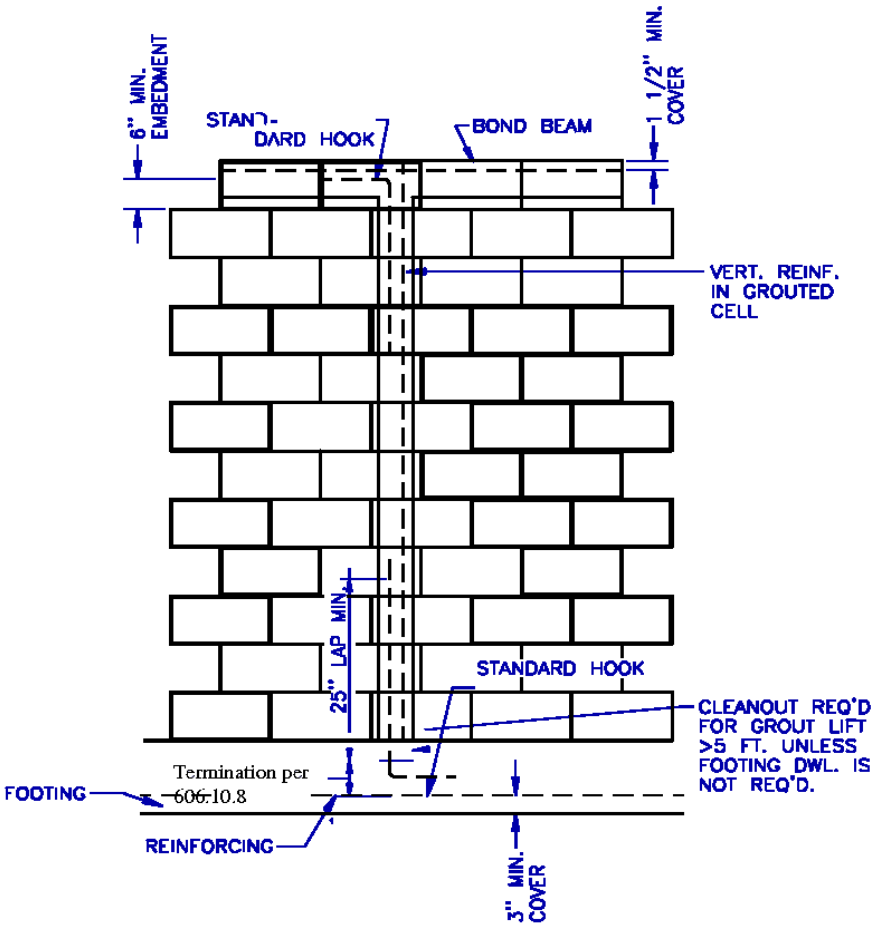


FIGURE R606.9.9A
CONTINUITY OF REINFORCEMENT
ONE STORY MASONRY WALL

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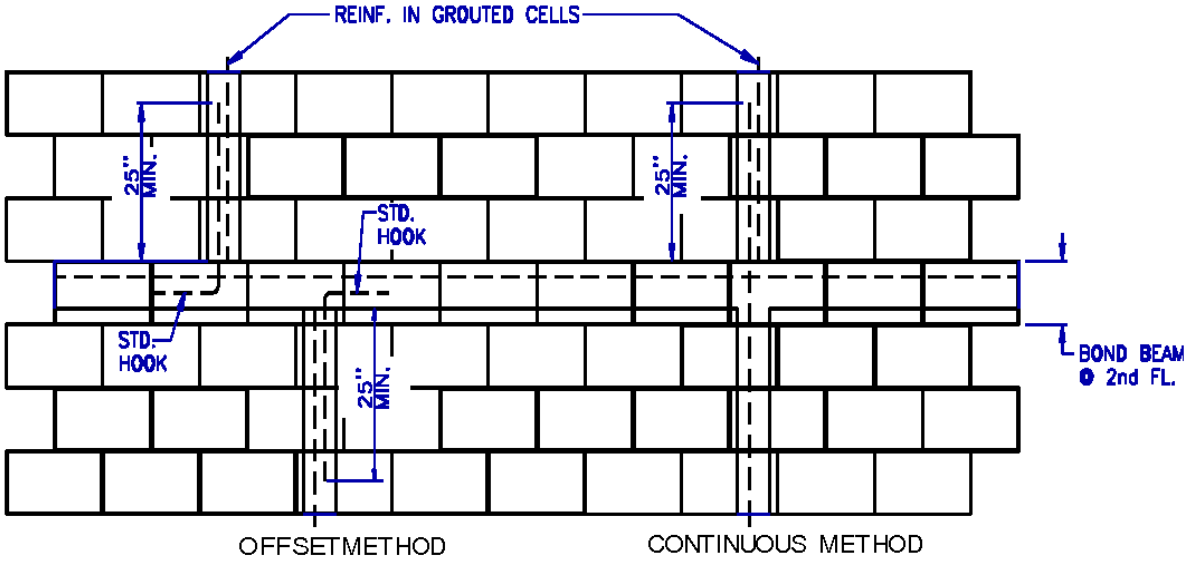


FIGURE R606.9.9B
CONTINUITY OF FIRST AND SECOND FLOOR VERTICAL WALL REINFORCEMENT

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TABLE R606.9.10.1 ~~15.1~~

MINIMUM CORROSION PROTECTION

MASONRY METAL ACCESSORY	STANDARD
Joint reinforcement, interior walls	ASTM A 641, Class 1
Wire ties or anchors in exterior walls completely embedded in mortar or grout	ASTM A 641, Class 3
Wire ties or anchors in exterior walls not completely embedded in mortar or grout	ASTM A 153, Class B-2
Joint reinforcement in exterior walls or interior walls exposed to moist environment	ASTM A 153, Class B-2
Sheet metal ties or anchors exposed to weather	ASTM A 153, Class B-2
Sheet metal ties or anchors completely embedded in mortar or grout	ASTM A 525, Class G-60
Stainless steel hardware for any exposure	ASTM A 167, Type 304

R606.13 ~~Protection for reinforcement.~~ Reserved.
~~**Bars shall be completely embedded in mortar or grout. Joint reinforcement embedded in horizontal mortar joints shall not have less than 5/8 inch (15.9 mm) mortar coverage from the exposed face. All other reinforcement shall have a minimum coverage of one bar diameter over all bars, but not less than 3/4 inch (19 mm), except where exposed to weather or soil, in which case the minimum coverage shall be 2 inches (51 mm)**~~

R606.11 ~~14~~ Beam supports. Beams, girders or other concentrated loads supported by a wall or column shall have a bearing of at least 3 inches (76 mm) in length measured parallel to the beam upon *solid masonry* not less than 4 inches (102 mm) in thickness, or upon a

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metal bearing plate of adequate design and dimensions to distribute the load safely, or upon a continuous reinforced masonry member projecting not less than 4 inches (102 mm) from the face of the wall.

R606.11 ~~14~~.1 Joist bearing~~. Joists shall have a bearing of not less than 1½ inches (38 mm), except as provided in Section R606.14, and shall be supported in accordance with Figure R606.11(1).~~ Except where supported on a 1-inch by 4-inch (25.4 mm by 102 mm) ribbon strip and nailed to the adjoining stud and as provided in Section 606.11, the ends of each joist shall not have less than 1½ inches (38 mm) of bearing on wood or metal, or less than 3 inches (76 mm) on masonry.

SECTION R607 UNIT MASONRY

R607.1 Mortar. Mortar for use in masonry construction shall be either Type M or S with a f'_m of 1500- psi in accordance with ~~comply with~~ ASTM C 270. ~~The type of mortar shall be in accordance with Sections R607.1.1, and R607.1.2~~ and shall meet the proportion specifications of Table R607. 1 or the property specifications of ASTM C 270.

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TABLE R607.1
MORTAR PROPORTIONS[a, b]

		PROPORTIONS BY VOLUME								
			Mortar Cement			Masonry Cement				
ar	Type	Portland Cement[a] or Blended Cement[b]	M	S	N	M	S	N	Hydrated lime[c] or Lime Putty	Aggregate Damp Loo
nt- e	M S N O	1 1 1 0	— — — —	— — — —		— — — —	— — — —		¼ Over ¼ to ½ Over ¼ to 1 ¼ Over 1 ¼ to 2 1/2	
ar ent	M M S S N O	1 — ½ — — —	— 1 — —	— — — —	1	— — — —	— — — 1		—	
nry ent	M M S S N O	1 — ½ —				— 1 — —	— — — 1	1 — 1 — 1 1	—	

For SI: 1 cubic foot = 0.0283 m3, 1 pound = 0.454 kg.

a. For the purpose of these specifications, the weight of 1 cubic foot of the respective materials shall be considered to be as follows:

Portland Cement	94 pounds	Masonry Cement	Weight printed on bag
Mortar Cement	Weight printed on bag	Hydrated Lime	40 pounds
Lime Putty (Quicklime)	80 pounds	Sand, damp and loose	80 pounds of dry sand

b. Two air-entraining materials shall not be combined in mortar.

c. Hydrated lime conforming to the requirements of ASTM C 207.

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TABLE R607.1
MORTAR PROPORTIONS[a,b]

PROPORTIONS BY VOLUME (cementitious materials)										
Mortar	Type	Portland cement or blended cement	Mortar cement			Masonry cement			Hydrated lime[c] or lime putty	Aggregate ratio (measured in damp, loose conditions)
			M	S	N	M	S	N		
Cement-lime	M	1	—	—	—	—	—	—	1/4	Not less than $2^1/_4$ and more than 3 times the sum of separate volumes of lime, if used, and
	S	1	—	—	—	—	—	—	over 1/4 to 1/2	
	N	1	—	—	—	—	—	—	over 1/2 to $1^1/_4$	
	O	1	—	—	—	—	—	—	over $1^1/_4$ to	
Mortar	M	1	—	—	1	—	—	—	—	
	M	—	1	—	—	—	—	—		
	S	1/2	—	—	1	—	—	—		
	S	—	—	1	—	—	—	—		
	N	—	—	—	1	—	—	—		
	O	—	—	—	1	—	—	—		
Masonry cement	M	1				—	—	1	—	
	M	—				1	—	—		
	S	1/2				—	—	1		
	S	—				—	1	—		
	N	—				—	—	1		
	O	—				—	—	1		

For SI: 1 cubic foot = 0.0283 m3, 1 pound = 0.454 kg.

d. For the purpose of these specifications, the weight of 1 cubic foot of the respective materials shall be considered to be as follows:

Portland Cement 94 pounds Masonry Cement Weight printed on bag
Mortar Cement Weight printed on bag Hydrated Lime 40 pounds
Lime Putty (Quicklime) 80 pounds Sand, damp and loose 80 pounds of dry sand

e. Two air-entraining materials shall not be combined in mortar.
f. Hydrated lime conforming to the requirements of ASTM C 207.

SECTION R609
GROUTED MASONRY

R609.1.2 Grout lift height. ~~Grouting requirements. Maximum pour heights and the minimum dimensions of spaces provided for grout placement shall conform to Table R609.1.2.~~ Where the following conditions are met, place grout in lifts not exceeding 12.67 ft (3.86 m).

1. The masonry has cured for at least 4 hours.
2. The grout slump is maintained between 10 and 11 in. (254 and 279 mm).
3. No intermediate reinforced bond beams are placed between the top and the bottom of the pour height.

Otherwise, place grout in lifts not exceeding 5 ft (1.52 m). If ~~the work~~ grouting is stopped for one hour or longer, the horizontal construction joints shall be formed by stopping all tiers at the same elevation and with the grout 1 inch (25.4 mm) below the top.

~~TABLE R609.1.2~~

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~~GROUT SPACE DIMENSIONS AND POUR HEIGHTS~~

R609.1.4 Grout placement. All cells containing reinforcement or anchor bolts shall be grouted solid. Grout shall be a plastic mix suitable for pumping without segregation of the constituents and shall be mixed thoroughly. Grout shall have a maximum coarse aggregate size of ⅜-inch, shall be placed at an 8 to 11-inch slump, and shall have a minimum specified compressive strength of 2000 psi at 28 days in accordance with ASTM C 476, or when tested in an approved manner. Grout shall be placed by pumping or by an approved alternate method and shall be placed before any initial set occurs and in no case more than $1^1/_2$ hours after water has been added. Grouting shall be done in a continuous pour, in lifts ~~not exceeding 5 feet (1524 mm). It shall be consolidated by puddling or mechanical vibrating during placing and reconsolidated after excess moisture has been absorbed but before plasticity is lost.~~ in accordance with Section 609.1.2. Grout shall be consolidated at the time of placement in accordance with the following:

1. Consolidate grout pours 12 in. (305 mm) or less in height by mechanical vibration or by puddling.
2. Consolidate pours exceeding 12 in. (305 mm) in height by mechanical vibration, and reconsolidate by mechanical vibration after initial water loss and settlement has occurred.

R609.1.5 Cleanouts. ~~Where required by the building official, cleanouts shall be provided as specified in this section.~~ Cleanouts shall be provided at the bottom course at each pour of grout where such pour exceeds 5 feet (1524 mm) in height and where required by the building official. Cleanouts shall be provided with an opening of sufficient size to permit removal of debris. The minimum opening dimension shall be 3 in. (76.2 mm). The cleanouts shall be sealed before grouting and after inspection.

~~R609.1.5.2 Grouted hollow unit masonry. Cleanouts shall be provided at the bottom course of each cell to be grouted at each pour of grout, where such pour exceeds 4 5 feet (1219 mm) in height.~~

DELETE SECTIONS R609.2, 609.3, AND R609.4 IN THEIR ENTIRETY AND ADD NEW SECTIONS R609.2 THROUGH R609.6 AS FOLLOWS:

R609.2 Bond beams. A reinforced bond beam shall be provided in masonry walls at the top of the wall and at each floor level of each exterior wall. Masonry walls not extending to the roof line shall have a bond beam at the top of the wall.

Exceptions:
1. A bond beam is not required at the floor level for slab-on-ground floors.
2. Gable endwalls shall be in conformance with Section R609.4.

R609.2.1 Bond beam types. Bond beams shall be one of the following:

1. 8" thick x 8" high masonry.
   8" thick x 12" high masonry.
   8" thick x 16" high masonry.

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8" thick by 24" high masonry
8" thick x 32" high masonry.

2. Precast units certified by the manufacturer for the uplift loads as set forth in Table R802.11. Precast units shall be installed in accordance with the manufacturer's specifications, and approved by the building official.

R609.2.2 Bond beam reinforcement. The minimum reinforcement for bond beam roof diaphragm chord tension reinforcement steel shall be as set forth in Table R609.2.2A1 through Table R609.2.2A-4 for the appropriate grade of steel and exposure category. The minimum reinforcement for bond beam uplift resisting reinforcement steel shall be as set forth in Tables R609.2.2B-1 through R609.2.2B-8 for the loads set forth in Table R802.11. The total minimum area of bond beam reinforcement shall be the sum of the required area of the diaphragm chord tension steel and the required area of bond beam uplift steel. Bond beam area shall be converted to bar size in accordance with Table R609.2.2C.

R609.2.3 Location of reinforcement. Reinforcement shall be located in the top of bond beams and in the top and bottom of bond beams also serving as lintels.

R609.2.4 Corner continuity. Corner continuity. Reinforcement in bond beams shall be continuous around corners as detailed in Figure R609.2.4.

Exception: In bond beams requiring two reinforcing bars, one bar shall be continuous around corners.

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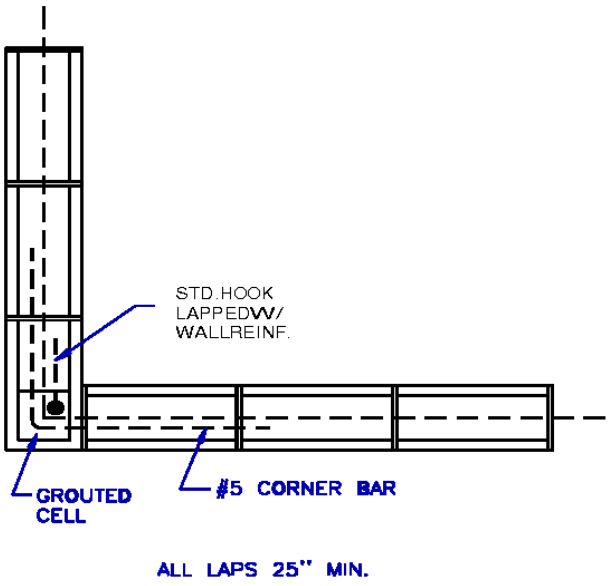


FIGURE R609.2.4
CORNER CONTINUITY OF BOND BEAM AND WALL REINFORCEMENT

R609.2.5 Change in height. Changes in bond beam height shall be permitted as detailed in Figure R609.2.5.

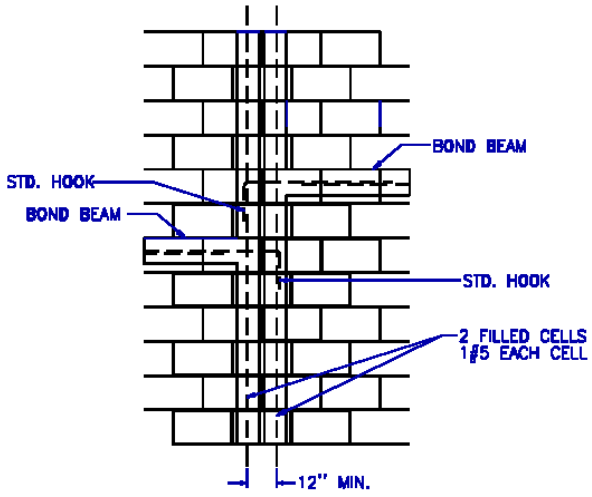


FIGURE R609.2.5
CHANGES IN BOND BEAM HEIGHT

R609.2.6 Precast units reinforcement. Precast bond beams shall properly receive and retain all vertical wall reinforcement. Precast bond beams shall contain the minimum amount of continuous reinforcement set forth in Sections R609.2.2 and R609. 6 as applicable and shall be reinforced at joints to act as drag struts and diaphragm chords.

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TABLE R609.2.2A-1 GRADE 60 EXPOSURE B
ROOF DIAPHRAGM CHORD TENSION BOND BEAM STEEL AREA, IN^2

Wind Speed	Building Width	Wall Height	BUILDING LENGTH				
			40	50	60	70	80
100	24	10	0.037	0.052	0.069	0.088	0.110
	24	8	0.030	0.042	0.055	0.071	0.088
	32	10	0.029	0.040	0.053	0.067	0.084
	32	8	0.023	0.032	0.042	0.054	0.067
	40	10	0.026	0.036	0.047	0.059	0.073
	40	8	0.021	0.029	0.037	0.047	0.058
110	24	10	0.045	0.063	0.084	0.107	0.133
	24	8	0.036	0.050	0.067	0.086	0.107
	32	10	0.035	0.048	0.064	0.082	0.101
	32	8	0.028	0.039	0.051	0.065	0.081
	40	10	0.032	0.043	0.057	0.072	0.088
	40	8	0.025	0.035	0.045	0.057	0.070
120	24	10	0.054	0.075	0.099	0.127	0.158
	24	8	0.043	0.060	0.080	0.102	0.127
	32	10	0.041	0.058	0.076	0.097	0.121
	32	8	0.033	0.046	0.061	0.078	0.097
	40	10	0.038	0.052	0.067	0.085	0.105
	40	8	0.030	0.041	0.054	0.068	0.084
130	24	10	0.063	0.088	0.117	0.149	0.186
	24	8	0.050	0.070	0.093	0.120	0.149
	32	10	0.049	0.068	0.089	0.114	0.142
	32	8	0.039	0.054	0.071	0.091	0.113
	40	10	0.044	0.061	0.079	0.100	0.123
	40	8	0.035	0.048	0.063	0.080	0.098
140	24	10	0.073	0.102	0.135	0.173	0.216
	24	8	0.058	0.082	0.108	0.139	0.173
	32	10	0.056	0.078	0.104	0.132	0.164
	32	8	0.045	0.063	0.083	0.106	0.131
	40	10	0.051	0.070	0.092	0.116	0.143
	40	8	0.041	0.056	0.073	0.093	0.114
150	24	10	0.084	0.117	0.155	0.199	0.248
	24	8	0.067	0.094	0.124	0.159	0.198
	32	10	0.065	0.090	0.119	0.152	0.189
	32	8	0.052	0.072	0.095	0.121	0.151
	40	10	0.059	0.081	0.105	0.133	0.164
	40	8	0.047	0.064	0.084	0.106	0.131

Notes:

1. Diaphragm chord tension steel area shall be added to bond beam uplift steel area for total required bond beam area of steel. Select appropriate bar size and number of bars from Table R609.2.2C.

\2. The tabular value for diaphragm chord tension steel area shall be permitted to be reduced by a factor of 0.65 for bond beam spans located in the end zone.

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TABLER609.2.2A-2 GRADE 60 ROOF EXPOSURE C
DIAPHRAGM CHORD TENSION BOND BEAM STEEL AREA, IN^2

Wind Speed	Building Width	Wall Height	BUILDING LENGTH 40	50	60	70	80
100	24	10	0.052	0.073	0.097	0.124	0.154
	24	8	0.042	0.058	0.077	0.099	0.123
	32	10	0.040	0.056	0.074	0.095	0.118
	32	8	0.032	0.045	0.059	0.076	0.094
	40	10	0.037	0.050	0.066	0.083	0.102
	40	8	0.029	0.040	0.052	0.066	0.082
110	24	10	0.063	0.088	0.117	0.150	0.187
	24	8	0.051	0.071	0.094	0.120	0.149
	32	10	0.049	0.068	0.090	0.114	0.142
	32	8	0.039	0.054	0.072	0.092	0.114
	40	10	0.044	0.061	0.079	0.100	0.124
	40	8	0.035	0.049	0.063	0.080	0.099
120	24	10	0.075	0.105	0.139	0.178	0.222
	24	8	0.060	0.084	0.112	0.143	0.178
	32	10	0.058	0.081	0.107	0.136	0.169
	32	8	0.046	0.065	0.085	0.109	0.135
	40	10	0.053	0.072	0.094	0.119	0.147
	40	8	0.042	0.058	0.076	0.095	0.118
130	24	10	0.088	0.123	0.164	0.209	0.261
	24	8	0.071	0.099	0.131	0.168	0.209
	32	10	0.068	0.095	0.125	0.160	0.199
	32	8	0.055	0.076	0.100	0.128	0.159
	40	10	0.062	0.085	0.111	0.140	0.173
	40	8	0.050	0.068	0.089	0.112	0.138
140	24	10	0.102	0.143	0.190	0.243	0.302
	24	8	0.082	0.114	0.152	0.194	0.242
	32	10	0.079	0.110	0.145	0.185	0.230
	32	8	0.063	0.088	0.116	0.148	0.184
	40	10	0.072	0.098	0.129	0.162	0.200
	40	8	0.057	0.079	0.103	0.130	0.160
150	24	10	0.118	0.164	0.218	0.279	0.347
	24	8	0.094	0.131	0.174	0.223	0.278
	32	10	0.091	0.126	0.167	0.213	0.264
	32	8	0.073	0.101	0.133	0.170	0.212
	40	10	0.082	0.113	0.148	0.187	0.230
	40	8	0.066	0.090	0.118	0.149	0.184

Notes:

1. Diaphragm chord tension steel area shall be added to bond beam uplift steel area for total required bond beam area of steel. Select appropriate bar size and number of bars from Table R609.2.2C.

\2. The tabular value for diaphragm chord tension steel area shall be permitted to be reduced by a factor of 0.65 for bond beam spans located in the end zone.

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_6017_Text_Mod-----CMU_FBCR_2013_Prescriptive_18.png

TABLE 609.2.2A-3 - GRADE 40 EXPOSURE B
ROOF DIAPHRAGM CHORD TENSION BOND BEAM STEEL AREA IN^2

Wind Speed	Building Width	Wall Height	BUILDING LENGTH				
			40	50	60	70	80
	24	10	0.037	0.052	0.069	0.088	0.110
	24	8	0.030	0.042	0.055	0.071	0.088
	32	10	0.029	0.040	0.053	0.067	0.084
	32	8	0.023	0.032	0.042	0.054	0.067
	40	10	0.026	0.036	0.047	0.059	0.073
100	40	8	0.021	0.029	0.037	0.047	0.058
	24	10	0.045	0.063	0.084	0.107	0.133
	24	8	0.036	0.050	0.067	0.086	0.107
	32	10	0.035	0.048	0.064	0.082	0.101
	32	8	0.028	0.039	0.051	0.065	0.081
	40	10	0.032	0.043	0.057	0.072	0.088
110	40	8	0.025	0.035	0.045	0.057	0.070
	24	10	0.054	0.075	0.099	0.127	0.158
	24	8	0.043	0.060	0.080	0.102	0.127
	32	10	0.041	0.058	0.076	0.097	0.121
	32	8	0.033	0.046	0.061	0.078	0.097
	40	10	0.038	0.052	0.067	0.085	0.105
120	40	8	0.030	0.041	0.054	0.068	0.084
	24	10	0.063	0.088	0.117	0.149	0.186
	24	8	0.050	0.070	0.093	0.120	0.149
	32	10	0.049	0.068	0.089	0.114	0.142
	32	8	0.039	0.054	0.071	0.091	0.113
	40	10	0.044	0.061	0.079	0.100	0.123
130	40	8	0.035	0.048	0.063	0.080	0.098
	24	10	0.073	0.102	0.135	0.173	0.216
	24	8	0.058	0.082	0.108	0.139	0.173
	32	10	0.056	0.078	0.104	0.132	0.164
	32	8	0.045	0.063	0.083	0.106	0.131
	40	10	0.051	0.070	0.092	0.116	0.143
140	40	8	0.041	0.056	0.073	0.093	0.114
	24	10	0.084	0.117	0.155	0.199	0.248
	24	8	0.067	0.094	0.124	0.159	0.198
	32	10	0.065	0.090	0.119	0.152	0.189
	32	8	0.052	0.072	0.095	0.121	0.151
	40	10	0.059	0.081	0.105	0.133	0.164
150	40	8	0.047	0.064	0.084	0.106	0.131

Notes:

1. Diaphragm chord tension steel area shall be added to bond beam uplift steel area for total required bond beam area of steel . Select appropriate bar size and number of bars from Table R609.2.2C

2. The tabular value for diaphragm chord tension steel area shall be permitted to be reduced by a factor of 0.65 for bond beam spans located in the end zone.

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TABLE 609.2.2A-4 - GRADE 40 EXPOSURE C
ROOF DIAPHRAGM CHORD TENSION BOND BEAM STEEL AREA IN^2

Wind Speed	Building Width	Wall Height	BUILDING LENGTH 40	50	60	70	80
	24	10	0.052	0.073	0.097	0.124	0.154
	24	8	0.042	0.058	0.077	0.099	0.123
	32	10	0.040	0.056	0.074	0.095	0.118
	32	8	0.032	0.045	0.059	0.076	0.094
	40	10	0.037	0.050	0.066	0.083	0.102
100	40	8	0.029	0.040	0.052	0.066	0.082
	24	10	0.063	0.088	0.117	0.150	0.187
	24	8	0.051	0.071	0.094	0.120	0.149
	32	10	0.049	0.068	0.090	0.114	0.142
	32	8	0.039	0.054	0.072	0.092	0.114
	40	10	0.044	0.061	0.079	0.100	0.124
110	40	8	0.035	0.049	0.063	0.080	0.099
	24	10	0.075	0.105	0.139	0.178	0.222
	24	8	0.060	0.084	0.112	0.143	0.178
	32	10	0.058	0.081	0.107	0.136	0.169
	32	8	0.046	0.065	0.085	0.109	0.135
	40	10	0.053	0.072	0.094	0.119	0.147
120	40	8	0.042	0.058	0.076	0.095	0.118
	24	10	0.088	0.123	0.164	0.209	0.261
	24	8	0.071	0.099	0.131	0.168	0.209
	32	10	0.068	0.095	0.125	0.160	0.199
	32	8	0.055	0.076	0.100	0.128	0.159
	40	10	0.062	0.085	0.111	0.140	0.173
130	40	8	0.050	0.068	0.089	0.112	0.138
	24	10	0.102	0.143	0.190	0.243	0.302
	24	8	0.082	0.114	0.152	0.194	0.242
	32	10	0.079	0.110	0.145	0.185	0.230
	32	8	0.063	0.088	0.116	0.148	0.184
	40	10	0.072	0.098	0.129	0.162	0.200
140	40	8	0.057	0.079	0.103	0.130	0.160
	24	10	0.118	0.164	0.218	0.279	0.347
	24	8	0.094	0.131	0.174	0.223	0.278
	32	10	0.091	0.126	0.167	0.213	0.264
	32	8	0.073	0.101	0.133	0.170	0.212
	40	10	0.082	0.113	0.148	0.187	0.230
150	40	8	0.066	0.090	0.118	0.149	0.184

Notes:

1. Diaphragm chord tension steel area shall be added to bond beam uplift steel area for total required bond beam area of steel . Select appropriate bar size and number of bars from Table R609.2.2C.

2. The tabular value for diaphragm chord tension steel area shall be permitted to be reduced by a factor of 0.65 for bond beam spans located in the end zone.

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TABLE R609.2.2B-1 GRADE 60
AREA OF STEEL REQUIRED IN BOND BEAM FOR UPLIFT BENDING, IN^2

Uplift, plf	8 in. bond beam/lintel span, ft							
	4	6	8	10	12	14	16	18
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	0.009	0.021	0.038	0.060	0.088	0.123	NP	NP
150	0.016	0.037	0.067	0.107	0.159	NP	NP	NP
200	0.023	0.053	0.096	0.157	NP	NP	NP	NP
250	0.030	0.069	0.127	0.211	NP	NP	NP	NP
300	0.037	0.086	0.160	0.270	NP	NP	NP	NP
350	0.044	0.103	0.194	NP	NP	NP	NP	NP
400	0.051	0.120	0.230	NP	NP	NP	NP	NP
450	0.058	0.138	0.269	NP	NP	NP	NP	NP
500	0.065	0.156	NP	NP	NP	NP	NP	NP
550	0.073	0.175	NP	NP	NP	NP	NP	NP
600	0.080	0.195	NP	NP	NP	NP	NP	NP
650	0.088	0.215	NP	NP	NP	NP	NP	NP
700	0.095	0.235	NP	NP	NP	NP	NP	NP
750	0.103	0.257	NP	NP	NP	NP	NP	NP
800	0.110	0.280	NP	NP	NP	NP	NP	NP
850	0.118	NP	NP	NP	NP	NP	NP	NP
900	0.126	NP	NP	NP	NP	NP	NP	NP
950	0.134	NP	NP	NP	NP	NP	NP	NP
1000	0.142	NP	NP	NP	NP	NP	NP	NP
1050	0.150	NP	NP	NP	NP	NP	NP	NP
1100	0.158	NP	NP	NP	NP	NP	NP	NP

Note:

1. **When reinforcement required is 0.00, only diaphragm chord tension reinforcement is required.**
2. **Diaphragm chord tension steel area shall be added to bond beam uplift steel area for total required bond beam area of steel. Select appropriate bar size and number of bars from Table R609.2.2C.**

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TABLE R609.2.2B-2 GRADE 60
AREA OF STEEL REQUIRED IN BOND BEAM FOR UPLIFT BENDING, IN^2

Uplift, plf	16 in. bond beam/lintel span, ft							
	4	6	8	10	12	14	16	18
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150	0.005	0.010	0.019	0.029	0.042	0.058	0.076	0.097
200	0.007	0.017	0.030	0.046	0.067	0.092	0.121	0.154
250	0.010	0.023	0.040	0.063	0.092	0.126	0.167	0.214
300	0.013	0.029	0.051	0.081	0.117	0.162	0.214	0.275
350	0.015	0.035	0.062	0.098	0.143	0.197	0.262	NP
400	0.018	0.041	0.073	0.116	0.169	0.234	0.312	NP
450	0.021	0.047	0.084	0.134	0.195	0.271	NP	NP
500	0.023	0.053	0.096	0.152	0.222	0.309	NP	NP
550	0.026	0.059	0.107	0.170	0.249	0.348	NP	NP
600	0.029	0.066	0.118	0.188	0.277	0.388	NP	NP
650	0.032	0.072	0.130	0.206	0.305	0.429	NP	NP
700	0.034	0.078	0.141	0.225	0.334	NP	NP	NP
750	0.037	0.084	0.152	0.244	0.363	NP	NP	NP
800	0.040	0.091	0.164	0.263	0.392	NP	NP	NP
850	0.042	0.097	0.176	0.282	0.422	NP	NP	NP
900	0.045	0.103	0.187	0.302	0.453	NP	NP	NP
950	0.048	0.110	0.199	0.321	NP	NP	NP	NP
1000	0.051	0.116	0.211	0.341	NP	NP	NP	NP
1050	0.053	0.122	0.223	0.362	NP	NP	NP	NP
1100	0.056	0.129	0.235	0.382	NP	NP	NP	NP

Notes:

1. **When reinforcement required is 0.00, only diaphragm chord tension reinforcement is required.**
2. **Diaphragm chord tension steel area shall be added to bond beam uplift steel area for total required bond beam area of steel . Select appropriate bar size and number of bars from Table R609.2.2C.**

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TABLE R609.2.2B-3 GRADE 60
AREA OF STEEL REQUIRED IN BOND BEAM FOR UPLIFT BENDING, IN^2

Uplift, plf	24 in. bond beam/lintel span, ft							
	4	6	8	10	12	14	16	18
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
200	0.004	0.008	0.014	0.022	0.032	0.043	0.057	0.072
250	0.005	0.012	0.021	0.032	0.047	0.064	0.084	0.106
300	0.007	0.015	0.027	0.043	0.062	0.085	0.111	0.142
350	0.009	0.019	0.034	0.054	0.077	0.106	0.139	0.177
400	0.010	0.023	0.041	0.064	0.093	0.127	0.167	0.213
450	0.012	0.027	0.048	0.075	0.108	0.148	0.195	0.249
500	0.014	0.031	0.054	0.086	0.124	0.170	0.224	0.286
550	0.015	0.034	0.061	0.096	0.140	0.192	0.253	0.323
600	0.017	0.038	0.068	0.107	0.155	0.213	0.282	0.361
650	0.019	0.042	0.075	0.118	0.171	0.235	0.311	0.399
700	0.020	0.046	0.082	0.129	0.187	0.257	0.341	0.438
750	0.022	0.050	0.089	0.140	0.203	0.280	0.371	0.477
800	0.024	0.053	0.095	0.150	0.219	0.302	0.401	0.517
850	0.025	0.057	0.102	0.161	0.235	0.325	0.432	0.558
900	0.027	0.061	0.109	0.172	0.251	0.347	0.462	NP
950	0.029	0.065	0.116	0.183	0.268	0.370	0.494	NP
1000	0.030	0.069	0.123	0.194	0.284	0.394	0.525	NP
1050	0.032	0.072	0.130	0.206	0.301	0.417	0.557	NP
1100	0.034	0.076	0.137	0.217	0.317	0.440	NP	NP

Notes:

1. When reinforcement required is 0.00, only diaphragm chord tension reinforcement is required.
2. Diaphragm chord tension steel area shall be added to bond beam uplift steel area for total required bond beam area of steel. Select appropriate bar size and number of bars from Table R609.2.2C.

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TABLE R609.2.2B-4 GRADE 60
AREA OF STEEL REQUIRED IN BOND BEAM FOR UPLIFT BENDING, IN^2

Uplift, plf	32 in. bond beam/lintel span, ft							
	4	6	8	10	12	14	16	18
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
250	0.003	0.007	0.012	0.019	0.027	0.037	0.048	0.061
300	0.004	0.009	0.017	0.026	0.038	0.052	0.068	0.086
350	0.005	0.012	0.022	0.034	0.049	0.067	0.087	0.111
400	0.007	0.015	0.027	0.042	0.060	0.082	0.107	0.136
450	0.008	0.018	0.031	0.049	0.071	0.097	0.127	0.161
500	0.009	0.020	0.036	0.057	0.082	0.112	0.147	0.187
550	0.010	0.023	0.041	0.065	0.093	0.127	0.167	0.213
600	0.011	0.026	0.046	0.072	0.104	0.143	0.187	0.239
650	0.013	0.029	0.051	0.080	0.116	0.158	0.208	0.265
700	0.014	0.031	0.056	0.088	0.127	0.174	0.228	0.291
750	0.015	0.034	0.061	0.095	0.138	0.189	0.249	0.317
800	0.016	0.037	0.066	0.103	0.149	0.205	0.269	0.344
850	0.018	0.040	0.071	0.111	0.161	0.220	0.290	0.370
900	0.019	0.042	0.076	0.119	0.172	0.236	0.311	0.397
950	0.020	0.045	0.081	0.127	0.183	0.252	0.332	0.424
1000	0.021	0.048	0.085	0.134	0.195	0.267	0.353	0.451
1050	0.022	0.051	0.090	0.142	0.206	0.283	0.374	0.479
1100	0.024	0.053	0.095	0.150	0.218	0.299	0.395	0.506

Notes:

1. **When reinforcement required is 0.00, only diaphragm chord tension reinforcement is required.**
2. **Diaphragm chord tension steel area shall be added to bond beam uplift steel area for total required bond beam area of steel. Select appropriate bar size and number of bars from Table R609.2.2C**

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TABLE 609.2.2B-5 GRADE 40
AREA BOND BEAM/LINTEL UPLIFT STEEL DESIGN

Uplift, plf	8 in. bond beam/lintel span, ft							
	4	6	8	10	12	14	16	18
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	0.014	0.032	0.057	0.090	0.132	0.184	NP	NP
150	0.024	0.055	0.100	0.160	0.239	NP	NP	NP
200	0.034	0.079	0.144	0.235	NP	NP	NP	NP
250	0.045	0.103	0.191	NP	NP	NP	NP	NP
300	0.055	0.128	0.240	NP	NP	NP	NP	NP
350	0.066	0.154	NP	NP	NP	NP	NP	NP
400	0.076	0.180	NP	NP	NP	NP	NP	NP
450	0.087	0.207	NP	NP	NP	NP	NP	NP
500	0.098	0.234	NP	NP	NP	NP	NP	NP
550	0.109	0.263	NP	NP	NP	NP	NP	NP
600	0.120	NP	NP	NP	NP	NP	NP	NP
650	0.131	NP	NP	NP	NP	NP	NP	NP
700	0.143	NP	NP	NP	NP	NP	NP	NP
750	0.154	NP	NP	NP	NP	NP	NP	NP
800	0.166	NP	NP	NP	NP	NP	NP	NP
850	0.177	NP	NP	NP	NP	NP	NP	NP
900	0.189	NP	NP	NP	NP	NP	NP	NP
950	0.201	NP	NP	NP	NP	NP	NP	NP
1000	0.213	NP	NP	NP	NP	NP	NP	NP
1050	0.225	NP	NP	NP	NP	NP	NP	NP
1100	0.238	NP	NP	NP	NP	NP	NP	NP

Notes:

1. When reinforcement required is 0.00, only diaphragm chord tension reinforcement is required.
2. Diaphragm chord tension steel area shall be added to bond beam uplift steel area for total required bond beam area of steel . Select appropriate bar size and number of bars from Table R609.2.2C.

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TABLE 609.2.2B-6 GRADE 40
AREA BOND BEAM/LINTEL UPLIFT STEEL DESIGN

Uplift, plf	16 in. bond beam/lintel span, ft							
	4	6	8	10	12	14	16	18
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150	0.007	0.016	0.028	0.044	0.063	0.087	0.114	0.145
200	0.011	0.025	0.044	0.069	0.101	0.138	0.181	0.231
250	0.015	0.034	0.061	0.095	0.138	0.190	0.250	0.320
300	0.019	0.043	0.077	0.121	0.176	0.242	0.321	0.413
350	0.023	0.052	0.093	0.147	0.215	0.296	0.393	NP
400	0.027	0.061	0.110	0.174	0.254	0.351	0.468	NP
450	0.031	0.071	0.127	0.200	0.293	0.407	NP	NP
500	0.035	0.080	0.143	0.227	0.333	0.464	NP	NP
550	0.039	0.089	0.160	0.254	0.374	0.523	NP	NP
600	0.043	0.098	0.177	0.282	0.415	0.583	NP	NP
650	0.047	0.108	0.194	0.310	0.458	0.644	NP	NP
700	0.051	0.117	0.211	0.338	0.500	NP	NP	NP
750	0.056	0.126	0.229	0.366	0.544	NP	NP	NP
800	0.060	0.136	0.246	0.394	0.588	NP	NP	NP
850	0.064	0.145	0.264	0.423	0.633	NP	NP	NP
900	0.068	0.155	0.281	0.453	0.679	NP	NP	NP
950	0.072	0.164	0.299	0.482	NP	NP	NP	NP
1000	0.076	0.174	0.317	0.512	NP	NP	NP	NP
1050	0.080	0.183	0.335	0.542	NP	NP	NP	NP
1100	0.084	0.193	0.353	0.573	NP	NP	NP	NP

Notes:

1. **When reinforcement required is 0.00, only diaphragm chord tension reinforcement is required.**
2. **Diaphragm chord tension steel area shall be added to bond beam uplift steel area for total required bond beam area of steel . Select appropriate bar size and number of bars from Table R609.2.2C.**

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TABLE 609.2.2B-7 GRADE 40
AREA BOND BEAM/LINTEL UPLIFT STEEL DESIGN

Uplift, plf	24 in. bond beam/lintel span, ft							
	4	6	8	10	12	14	16	18
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
200	0.005	0.012	0.021	0.033	0.048	0.065	0.085	0.108
250	0.008	0.017	0.031	0.049	0.070	0.096	0.126	0.160
300	0.010	0.023	0.041	0.065	0.093	0.127	0.167	0.212
350	0.013	0.029	0.051	0.080	0.116	0.159	0.209	0.266
400	0.015	0.034	0.061	0.096	0.139	0.191	0.251	0.319
450	0.018	0.040	0.072	0.112	0.163	0.223	0.293	0.374
500	0.020	0.046	0.082	0.128	0.186	0.255	0.336	0.429
550	0.023	0.051	0.092	0.144	0.209	0.287	0.379	0.485
600	0.025	0.057	0.102	0.161	0.233	0.320	0.423	0.542
650	0.028	0.063	0.112	0.177	0.257	0.353	0.467	0.599
700	0.030	0.069	0.123	0.193	0.280	0.386	0.511	0.657
750	0.033	0.074	0.133	0.209	0.304	0.419	0.556	0.716
800	0.035	0.080	0.143	0.226	0.329	0.453	0.601	0.776
850	0.038	0.086	0.154	0.242	0.353	0.487	0.647	0.837
900	0.040	0.091	0.164	0.259	0.377	0.521	0.694	NP
950	0.043	0.097	0.174	0.275	0.402	0.556	0.741	NP
1000	0.045	0.103	0.185	0.292	0.426	0.590	0.788	NP
1050	0.048	0.109	0.195	0.308	0.451	0.625	0.836	NP
1100	0.051	0.114	0.205	0.325	0.476	0.661	NP	NP

Notes:

1. When reinforcement required is 0.00, only diaphragm chord tension reinforcement is required.
2. Diaphragm chord tension steel area shall be added to bond beam uplift steel area for total required bond beam area of steel . Select appropriate bar size and number of bars from Table R609.2.2C.

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TABLE 609.2.2B-8GRADE 40
AREA BOND BEAM/LINTEL UPLIFT STEEL DESIGN

Uplift, plf	32 in. bond beam/lintel span, ft							
	4	6	8	10	12	14	16	18
50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
150	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
250	0.004	0.010	0.018	0.028	0.040	0.055	0.072	0.091
300	0.006	0.014	0.025	0.039	0.057	0.077	0.101	0.129
350	0.008	0.018	0.033	0.051	0.073	0.100	0.131	0.166
400	0.010	0.022	0.040	0.062	0.090	0.123	0.161	0.204
450	0.012	0.026	0.047	0.074	0.107	0.145	0.191	0.242
500	0.014	0.031	0.054	0.085	0.123	0.168	0.221	0.281
550	0.015	0.035	0.062	0.097	0.140	0.191	0.251	0.319
600	0.017	0.039	0.069	0.108	0.157	0.214	0.281	0.358
650	0.019	0.043	0.077	0.120	0.173	0.237	0.312	0.397
700	0.021	0.047	0.084	0.132	0.190	0.260	0.342	0.436
750	0.023	0.051	0.091	0.143	0.207	0.284	0.373	0.476
800	0.025	0.055	0.099	0.155	0.224	0.307	0.404	0.515
850	0.026	0.059	0.106	0.166	0.241	0.330	0.435	0.556
900	0.028	0.064	0.113	0.178	0.258	0.354	0.466	0.596
950	0.030	0.068	0.121	0.190	0.275	0.377	0.497	0.636
1000	0.032	0.072	0.128	0.201	0.292	0.401	0.529	0.677
1050	0.034	0.076	0.136	0.213	0.309	0.425	0.561	0.718
1100	0.035	0.080	0.143	0.225	0.326	0.449	0.592	0.760

Notes:

1When reinforcement required is 0.00, only diaphragm chord tension reinforcement is required.

2Diaphragm chord tension steel area shall be added to bond beam uplift steel area for total required bond beam area of steel Select appropriate bar size and number of bars from Table R609.2.2C.

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TABLE R609.2.2C BOND BEAM AREA OF STEEL PROVIDED IN^2/FT			
Number of bars	Bar size		
	No. 4	No. 5	No. 6
1	0.20	0.31	0.44
2	0.40	0.62	0.88

`R609.3 Vertical Reinforcement. Vertical reinforcement shall be provided in conformance with Sections R609.3.1 through R609.3.6.

R609.3.1 One reinforcement bar shall be provided in each corner, including interior corners and corners created by changes in wall direction or offsetting of walls.

R609.3.2 Openings. A minimum of one bar of the size used for vertical wall reinforcement shall be provided on each side of openings wider than 6 feet. If more vertical reinforcement is interrupted by an opening than is provided beside the opening (total in the first and second cells adjacent to the opening), one-half of the equivalent area of reinforcement interrupted by the opening shall be placed on each side of the opening. This reinforcement shall be placed within the first and/or second cells beside the opening.

R609.3.2 Girders. At least one reinforcement bar shall be provided where girders or girder trusses bear on masonry walls.

R609.3.3 Spacing. Vertical reinforcement shall be provided as set forth in Tables R609.3.3.A-1 through Table R609.3.3A-4 and R609.3.3.B-1, through R609.3.3B-4 as applicable.

R609.3.4 Precast bond beams. Vertical reinforcement used in conjunction with precast bond beams shall be spaced the same as for masonry bond beams. Reinforcement shall terminate in the precast beam as set forth in Section R606.9.8.

R609.3.5 Duplication. Reinforcing steel requirements shall not be additive. A single bar shall be permitted to satisfy multiple requirements.

R609.3.6 Termination. Vertical reinforcement shall terminate in footings and bond beams as set forth in Section R606.9.8.

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TABLE R609.3.3A-1 GRADE 60
SINGLE STORY AND TOP STORY WALLS PARALLEL TO RIDGE VERTICAL REINFORCEMENT SPACING No. 5 BARS (⅝")

	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
100	8.00	9.87	9.87	9.87	8.34	8.34	8.34
	8.67	9.97	9.97	9.97	8.42	8.42	8.42
	9.33	10.06	10.06	10.06	8.49	8.49	8.49
	10.00	10.14	10.14	10.14	8.57	8.57	8.54
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
110	8.00	8.97	8.97	8.97	7.58	7.58	7.58
	8.67	9.06	9.06	9.06	7.65	7.65	7.65
	9.33	9.14	9.14	9.14	7.72	7.72	7.72
	10.00	9.22	9.22	9.22	7.79	7.79	7.79
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
120	8.00	8.23	8.23	8.23	6.95	6.95	6.95
	8.67	8.30	8.30	8.30	7.01	7.01	7.01
	9.33	8.38	8.38	8.38	7.08	7.08	7.08
	10.00	8.45	8.45	8.45	6.87	6.87	6.87
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
130	8.00	7.59	7.59	7.59	6.41	6.41	6.21
	8.67	7.67	7.67	7.67	6.47	6.14	5.67
	9.33	7.73	7.73	7.57	6.03	5.58	5.19
	10.00	7.80	7.36	6.90	5.44	5.07	4.74
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
140	8.00	7.05	7.05	7.05	5.95	5.76	5.27
	8.67	7.12	7.12	7.01	5.70	5.22	4.82
	9.33	7.18	6.88	6.40	5.14	4.75	4.41
	10.00	6.70	6.24	5.85	4.64	4.32	4.04
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
150	8.00	6.58	6.58	6.58	5.46	4.96	4.54
	8.67	6.64	6.50	6.01	4.91	4.50	4.15
	9.33	6.39	5.91	5.49	4.43	4.09	3.80
	10.00	5.76	5.37	5.02	4.00	3.72	3.48

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S6017 Text Modification

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TABLE R609.3.3A-2 GRADE 60
SINGLE STORY AND TOP STORY WALLS PARALLEL TO RIDGE VERTICAL REINFORCEMENT SPACING No. 4 BARS (½")

	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
100	8.00	9.87	9.87	9.87	8.34	7.97	7.32
	8.67	9.97	9.97	9.97	7.79	7.17	6.65
	9.33	10.06	9.69	9.08	6.98	6.48	6.05
	10.00	9.06	8.72	8.22	6.27	5.87	5.51
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
110	8.00	8.97	8.97	8.76	7.01	6.38	5.85
	8.67	9.06	9.06	9.06	6.83	6.83	6.83
	9.33	8.45	8.45	8.45	5.99	5.99	5.99
	10.00	7.47	7.47	7.47	5.30	5.30	5.30
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
120	8.00	8.23	7.72	7.09	5.75	5.23	4.80
	8.67	8.07	8.07	8.07	5.72	5.72	5.72
	9.33	7.08	7.08	7.08	5.02	5.02	5.02
	10.00	6.26	6.26	6.26	4.43	4.43	4.43
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
130	8.00	7.04	6.41	5.88	4.82	4.38	4.01
	8.67	6.29	5.78	5.35	4.32	3.96	3.66
	9.33	5.65	5.24	4.88	3.89	3.60	3.35
	10.00	5.09	4.75	4.45	3.51	3.27	3.06
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
140	8.00	7.05	7.05	7.05	5.95	5.76	5.27
	8.67	7.12	7.12	7.01	5.70	5.22	4.82
	9.33	7.18	6.88	6.40	5.14	4.75	4.41
	10.00	6.70	6.24	5.85	4.64	4.32	4.04
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
150	8.00	6.58	6.58	6.58	5.46	4.96	4.54
	8.67	6.64	6.50	6.01	4.91	4.50	4.15
	9.33	6.39	5.91	5.49	4.43	4.09	3.80
	10.00	5.76	5.37	5.02	4.00	3.72	3.48

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_6017_Text_Mod-----CMU_FBCR_2013_Prescriptive_31.png

TABLE R609.3.3A-3 GRADE 40
SINGLE STORY AND TOP STORY WALLS PARALLEL TO RIDGE VERTICAL REINFORCEMENT SPACING No. 5 BARS(⅝")

	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
100	8.00	9.87	9.87	9.87	8.34	8.23	7.57
	8.67	9.97	9.97	9.97	8.05	7.41	6.87
	9.33	10.06	10.01	9.38	7.22	6.70	6.25
	10.00	9.36	9.01	8.49	6.48	6.06	5.69
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
110	8.00	8.97	8.97	8.97	7.24	6.59	6.05
	8.67	9.06	9.06	9.06	7.06	7.06	7.06
	9.33	8.73	8.73	8.73	6.19	6.19	6.19
	10.00	7.72	7.72	7.72	5.47	5.47	5.47
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
120	8.00	8.23	7.98	7.33	5.95	5.41	4.96
	8.67	8.30	8.30	8.30	5.92	5.92	5.92
	9.33	7.32	7.32	7.32	5.19	5.19	5.19
	10.00	6.47	6.47	6.47	4.58	4.58	4.58
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
130	8.00	7.27	6.62	6.07	4.98	4.52	4.14
	8.67	6.50	5.98	5.53	4.47	4.10	3.78
	9.33	5.84	5.41	5.04	4.02	3.72	3.46
	10.00	5.26	4.91	4.60	3.63	3.38	3.16
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
140	8.00	6.15	5.59	5.13	4.23	3.84	3.52
	8.67	5.51	5.06	4.67	3.80	3.48	3.21
	9.33	4.95	4.59	4.27	3.43	3.17	2.94
	10.00	4.46	4.16	3.90	3.09	2.88	2.69
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
150	8.00	5.27	4.79	4.39	3.64	3.31	3.02
	8.67	4.73	4.34	4.00	3.27	3.00	2.76
	9.33	4.26	3.94	3.66	2.95	2.73	2.53
	10.00	3.84	3.58	3.35	2.66	2.48	2.32

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TABLE R609.3.3A-4 GRADE 40
SINGLE STORY AND TOP STORY WALLS PARALLEL TO RIDGE VERTICAL REINFORCEMENT SPACING No. 4 BARS (½")

	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
100	8.00	8.78	8.04	7.42	5.82	5.31	4.88
	8.67	7.77	7.19	6.69	5.19	4.78	4.43
	9.33	6.83	6.46	6.05	4.66	4.32	4.03
	10.00	6.04	5.81	5.48	4.18	3.91	3.67
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
110	8.00	6.94	6.34	5.84	4.67	4.25	3.90
	8.67	6.42	6.42	6.42	4.56	4.56	4.56
	9.33	5.63	5.63	5.63	4.00	4.00	4.00
	10.00	4.98	4.98	4.98	3.53	3.53	3.53
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
120	8.00	5.64	5.15	4.73	3.84	3.49	3.20
	8.67	5.38	5.38	5.38	3.82	3.82	3.82
	9.33	4.72	4.72	4.72	3.35	3.35	3.35
	10.00	4.17	4.17	4.17	2.95	2.95	2.95
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
130	8.00	4.69	4.27	3.92	3.21	2.92	2.67
	8.67	4.19	3.86	3.57	2.88	2.64	2.44
	9.33	3.77	3.49	3.25	2.60	2.40	2.23
	10.00	3.39	3.17	2.97	2.34	2.18	2.04
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
140	8.00	6.15	5.59	5.13	4.23	3.84	3.52
	8.67	5.51	5.06	4.67	3.80	3.48	3.21
	9.33	4.95	4.59	4.27	3.43	3.17	2.94
	10.00	4.46	4.16	3.90	3.09	2.88	2.69
	Exposure	B	B	B	C	C	C
		Building Width					
Wind Speed	Wall Height	24	32	40	24	32	40
150	8.00	5.27	4.79	4.39	3.64	3.31	3.02
	8.67	4.73	4.34	4.00	3.27	3.00	2.76
	9.33	4.26	3.94	3.66	2.95	2.73	2.53
	10.00	3.84	3.58	3.35	2.66	2.48	2.32

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_6017_Text_Mod-----CMU_FBCR_2013_Prescriptive_33.png

TABLE R609.3.3B-1 GRADE 60

MAXIMUM SPACING OF No. 5 ($^5/_8$")VERTICAL REINFORCEMENT AT CONTINUOUS CONCRETE MASONRY LOWER STORIES OF MULTISTORY AND GABLE ENDS SINGLE STORY OR TOP STORY OF MULTISTORY, FEET

Wind Speed		100		110		120	
Exp	Wall Ht	End Zone	Int Zone	End Zone	Int Zone	End Zone	Int Zone
B	8	9.87	10.53	8.97	9.57	8.23	8.78
	8.67	9.97	10.59	9.06	9.63	8.30	8.82
	9.33	10.06	10.64	9.14	9.68	8.38	8.87
	10	10.14	10.69	9.22	9.72	8.45	8.91
	12	10.17	10.83	8.38	9.14	7.01	7.65
	14	7.75	8.29	6.37	6.82	5.33	5.70
	16	6.12	6.43	5.03	5.29	4.19	4.41
	18	4.97	5.14	4.07	4.21	3.39	3.51
	20	4.12	4.20	3.38	3.44	2.81	2.86
	22	3.48	3.49	2.84	2.85	2.36	2.36
	.	.	.	.	.	.	.
C	8	8.34	8.89	7.58	8.09	6.95	7.41
	8.67	8.42	8.94	7.65	8.13	7.01	7.45
	9.33	8.49	8.99	7.72	8.17	7.08	7.49
	10	8.57	9.03	7.79	8.21	6.87	7.53
	12	7.21	7.86	5.92	6.47	4.95	5.40
	14	5.47	5.86	4.49	4.81	3.75	4.01
	16	4.31	4.54	3.53	3.72	2.94	3.09
	18	3.49	3.61	2.85	2.95	2.37	2.45
	20	2.89	2.94	2.35	2.40	1.94	1.98
	22	2.43	2.43	1.97	1.98	1.62	1.63

Wind Speed		130		140		150	
Exp	Wall Ht	End Zone	Int Zone	End Zone	Int Zone	End Zone	Int Zone
B	8	7.59	8.10	7.05	7.52	6.58	7.02
	8.67	7.67	8.15	7.12	7.56	6.64	7.06
	9.33	7.73	8.19	7.18	7.60	6.70	7.10
	10	7.80	8.23	7.08	7.64	6.14	6.85
	12	5.95	6.49	5.10	5.57	4.42	4.83
	14	4.51	4.83	3.86	4.14	3.34	3.58
	16	3.55	3.73	3.03	3.19	2.62	2.76
	18	2.86	2.96	2.44	2.53	2.10	2.18
	20	2.36	2.41	2.01	2.05	1.72	1.76
	22	1.98	1.99	1.68	1.68	1.43	1.44
C	8	6.41	6.84	5.95	6.35	5.56	5.93
	8.67	6.47	6.88	6.01	6.39	5.24	5.96
	9.33	6.52	6.91	5.53	6.37	4.75	5.53
	10	5.83	6.50	5.00	5.58	4.31	4.84
	12	4.19	4.58	3.59	3.92	3.10	3.39
	14	3.16	3.39	2.70	2.90	2.33	2.50
	16	2.47	2.61	2.11	2.22	1.81	1.91
	18	1.99	2.06	1.68	1.75	1.44	1.49
	20	1.63	1.66	1.37	1.40	1.16	1.19
	22	1.35	1.35	1.13	1.14	1.03	1.26

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_6017_Text_Mod-----CMU_FBCR_2013_Prescriptive_34.png

TABLE R609.3.3B-2 GRADE 60

MAXIMUM SPACING OF No. 4 (½")VERTICAL REINFORCEMENT AT CONTINUOUS CONCRETE MASONRY LOWER STORIES OF MULTISTORY AND GABLE ENDS SINGLE STORY OR TOP STORY OF MULTISTORY, FEET

Wind Speed		100		110		120	
Exp	Wall Ht	End Zone	Int Zone	End Zone	Int Zone	End Zone	Int Zone
B	8	9.87	10.53	8.97	9.57	8.23	8.78
	8.67	9.97	10.59	9.06	9.63	8.07	8.82
	9.33	10.06	10.64	8.45	9.48	7.08	7.95
	10	9.06	10.09	7.47	8.32	6.26	6.97
	12	6.56	7.16	5.40	5.89	4.52	4.93
	14	5.00	5.35	4.11	4.40	3.44	3.68
	16	3.95	4.15	3.24	3.41	2.71	2.85
	18	3.21	3.31	2.63	2.72	2.19	2.27
	20	2.66	2.71	2.18	2.22	1.81	1.84
	22	2.25	2.25	1.83	1.84	1.52	1.53
	.	.	.	.	.	.	.
C	8	8.34	8.89	7.58	8.09	6.20	7.41
	8.67	8.29	8.94	6.83	7.73	5.58	6.48
	9.33	7.28	8.17	5.99	6.73	5.02	5.64
	10	6.43	7.16	5.30	5.90	4.43	4.94
	12	4.65	5.07	3.82	4.17	3.19	3.49
	14	3.53	3.78	2.90	3.10	2.42	2.59
	16	2.78	2.93	2.28	2.40	1.90	2.00
	18	2.25	2.33	1.84	1.90	1.53	1.58
	20	1.86	1.90	1.52	1.55	1.25	1.28
	22	1.57	1.57	1.27	1.28	1.05	1.05

Wind Speed		130		140		150	
Exp	Wall Ht	End Zone	Int Zone	End Zone	Int Zone	End Zone	Int Zone
B	8	7.59	8.10	6.42	7.52	5.47	6.68
	8.67	6.86	7.76	5.77	6.68	4.93	5.80
	9.33	6.02	6.76	5.17	5.81	4.46	5.05
	10	5.32	5.92	4.57	5.09	3.96	4.42
	12	3.84	4.19	3.29	3.59	2.85	3.12
	14	2.91	3.12	2.49	2.67	2.16	2.31
	16	2.29	2.41	1.96	2.06	1.69	1.78
	18	1.85	1.91	1.58	1.63	1.36	1.41
	20	1.52	1.55	1.30	1.32	1.11	1.13
	22	1.28	1.28	1.08	1.09	0.93	0.93
C	8	5.15	6.29	4.36	5.30	3.73	4.53
	8.67	4.65	5.50	3.94	4.73	3.38	4.09
	9.33	4.21	4.79	3.57	4.11	3.06	3.57
	10	3.76	4.19	3.22	3.60	2.78	3.12
	12	2.70	2.95	2.31	2.53	2.00	2.19
	14	2.04	2.19	1.74	1.87	1.50	1.61
	16	1.60	1.68	1.36	1.43	1.17	1.23
	18	1.28	1.33	1.09	1.13	0.93	0.96
	20	1.05	1.07	0.88	0.90	0.75	0.77
	22	0.87	0.87	0.73	0.73	0.67	0.81

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TABLE R609.3.3B-3 GRADE 40

MAXIMUM SPACING OF No. 5 ($^5/_8$")VERTICAL REINFORCEMENT AT CONTINUOUS CONCRETE MASONRY LOWER STORIES OF MULTISTORY AND GABLE ENDS SINGLE STORY OR TOP STORY OF MULTISTORY, FEET

Wind Speed		100		110		120	
Exp	Wall Ht	End Zone	Int Zone	End Zone	Int Zone	End Zone	Int Zone
B	8	9.87	10.53	8.97	9.57	8.23	8.78
	8.67	9.97	10.59	9.06	9.63	8.30	8.82
	9.33	10.06	10.64	8.73	9.68	7.32	8.21
	10	9.36	10.42	7.72	8.60	6.47	7.20
	12	6.78	7.39	5.58	6.09	4.67	5.10
	14	5.16	5.53	4.25	4.55	3.55	3.80
	16	4.08	4.29	3.35	3.52	2.80	2.94
	18	3.31	3.43	2.72	2.81	2.26	2.34
	20	2.75	2.80	2.25	2.29	1.87	1.90
	22	2.32	2.33	1.90	1.90	1.57	1.58
	.	.	.	.	.	.	.
C	8	8.34	8.89	7.58	8.09	6.40	7.41
	8.67	8.42	8.94	7.06	7.99	5.77	6.69
	9.33	7.52	8.44	6.19	6.95	5.19	5.82
	10	6.65	7.40	5.47	6.10	4.58	5.10
	12	4.80	5.24	3.95	4.31	3.30	3.60
	14	3.65	3.91	3.00	3.21	2.50	2.68
	16	2.88	3.02	2.35	2.48	1.96	2.06
	18	2.33	2.41	1.90	1.97	1.58	1.63
	20	1.92	1.96	1.57	1.60	1.30	1.32
	22	1.62	1.62	1.31	1.32	1.08	1.09

Wind Speed		130		140		150	
Exp	Wall Ht	End Zone	Int Zone	End Zone	Int Zone	End Zone	Int Zone
B	8	7.59	8.10	6.63	7.52	5.65	6.91
	8.67	7.09	8.02	5.97	6.90	5.09	5.99
	9.33	6.22	6.98	5.35	6.00	4.61	5.21
	10	5.49	6.12	4.72	5.26	4.10	4.57
	12	3.96	4.33	3.40	3.71	2.95	3.22
	14	3.01	3.22	2.58	2.76	2.23	2.39
	16	2.36	2.49	2.02	2.13	1.74	1.84
	18	1.91	1.98	1.63	1.69	1.40	1.45
	20	1.57	1.60	1.34	1.36	1.15	1.17
	22	1.32	1.32	1.12	1.12	0.00	0.00
C	8	5.32	6.50	4.50	5.47	3.86	4.68
	8.67	4.80	5.69	4.07	4.89	3.49	4.22
	9.33	4.35	4.95	3.69	4.25	3.17	3.68
	10	3.88	4.33	3.33	3.72	2.87	3.22
	12	2.79	3.05	2.39	2.61	2.07	2.26
	14	2.11	2.26	1.80	1.93	1.55	1.67
	16	1.65	1.74	1.40	1.48	1.21	1.27
	18	1.32	1.37	1.12	1.16	0.00	0.00
	20	1.08	1.10	0.00	0.00	0.00	0.00
	22	0.00	0.00	0.00	0.00	0.00	0.00

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TABLE R609.3.3B-4 GRADE 40

GRADE 40MAXIMUM SPACING OF NO. 4 (½") VERTICAL REINFORCEMENT AT CONTINUOUS CONCRETE OR MASONRY LOWER STORIES OF MULTISTORY AND GABLE ENDS SINGLE STORY OR TOP STORY OF MULTISTORY, FEET

Wind Speed		100		110		120	
Exp	Wall Ht	End Zone	Int Zone	End Zone	Int Zone	End Zone	Int Zone
B	8	8.98	10.23	7.41	8.44	6.21	7.08
	8.67	7.78	8.80	6.42	7.26	5.38	6.09
	9.33	6.83	7.66	5.63	6.32	4.72	5.30
	10	6.04	6.73	4.98	5.55	4.17	4.65
	12	4.38	4.77	3.60	3.93	3.02	3.29
	14	3.33	3.56	2.74	2.93	2.29	2.45
	16	2.63	2.77	2.16	2.27	1.80	1.90
	18	2.14	2.21	1.75	1.81	1.46	1.51
	20	1.77	1.81	1.45	1.48	1.21	1.23
	22	1.50	1.50	1.22	1.23	1.01	1.02
C	8	6.38	7.28	5.08	6.00	4.13	5.03
	8.67	5.53	6.25	4.56	5.15	3.72	4.32
	9.33	4.85	5.44	4.00	4.49	3.35	3.76
	10	4.29	4.78	3.53	3.93	2.95	3.29
	12	3.10	3.38	2.55	2.78	2.13	2.32
	14	2.35	2.52	1.93	2.07	1.61	1.73
	16	1.85	1.95	1.52	1.60	1.26	1.33
	18	1.50	1.55	1.23	1.27	1.02	1.05
	20	1.24	1.26	1.01	1.03	0.84	0.85
	22	1.04	1.05	0.85	0.85	0.70	0.70

Wind Speed		130		140		150	
Exp	Wall Ht	End Zone	Int Zone	End Zone	Int Zone	End Zone	Int Zone
B	8	5.10	6.02	4.28	5.18	3.64	4.46
	8.67	4.57	5.17	3.85	4.45	3.29	3.87
	9.33	4.01	4.50	3.45	3.87	2.97	3.36
	10	3.54	3.95	3.05	3.39	2.64	2.95
	12	2.56	2.79	2.19	2.40	1.90	2.08
	14	1.94	2.08	1.66	1.78	1.44	1.54
	16	1.53	1.61	1.30	1.37	1.13	1.19
	18	1.23	1.27	1.05	1.09	0.90	0.94
	20	1.02	1.03	0.86	0.88	0.74	0.76
	22	0.85	0.85	0.72	0.72	0.00	0.00
C	8	3.43	4.19	2.90	3.53	2.49	3.02
	8.67	3.10	3.67	2.62	3.15	2.25	2.72
	9.33	2.80	3.19	2.38	2.74	2.04	2.38
	10	2.51	2.79	2.15	2.40	1.85	2.08
	12	1.80	1.97	1.54	1.69	1.33	1.46
	14	1.36	1.46	1.16	1.25	1.00	1.08
	16	1.06	1.12	0.91	0.96	0.78	0.82
	18	0.85	0.89	0.72	0.75	0.00	0.00
	20	0.70	0.71	0.00	0.00	0.00	0.00
	22	0.00	0.00	0.00	0.00	0.00	0.00

R609.4 Masonry gables. Gable end walls of concrete or masonry shall be constructed full

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height to the roof line.

Exception: Gable end trusses or wood framed gable end walls in conformance with Tables R609.4A and R609.4B and Figure R609.4. Wood gable stud wall connectors shall be capable of resisting the vertical and horizontal loads of Table 609.4B as well as the uplift load stipulated at Figure 609.4. Where masonry gable end walls do not go to the roof a bond beam complying with Section R609.2 shall be provided at the top of the masonry.

R609.4.1 Rake beam. Where concrete or masonry is carried full height to the roof line, a cast-in-place rake beam as detailed in Figure R609.4.1 shall be provided. The minimum thickness of the rake beam from top of masonry shall be 4 inches. One No. 5 continuous reinforcing bar shall be placed in the rake beam along the roof line.

R609.4.2 Vertical reinforcement. Vertical reinforcement shall be provided at the maximum spacing as set forth in Tables R609.3.3B-1 through R609.3.3.B-4 as applicable.

R609.4.3 Termination. Required vertical reinforcement shall terminate at the rake beam in accordance with Section R606.9.8.

R609.4.4 Nailer. A minimum 2x4 nailer for connecting roof sheathing shall be bolted to the top of the wall with a minimum of ½" anchor bolts spaced as set forth in Table R609.4.4. The nailer shall be permitted to be bolted to the inside or outside of the wall.

R609.4.5 Gable Overhang. Gable overhangs up to 2 feet in width complying with Figure R609.4.5 shall be permitted.

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TABLE R609.4A

WOOD GABLE BRACE NAILING

			RAKE HEIGHT					
		NAIL SIZE	12	14	16	18	20	22
EXPOSURE B	100	10d	4	4	5	5	6	6
		8d	6	7	8	8	9	10
	110	10d	4	5	6	6	7	7
		8d	7	8	9	10	11	11
	120	10d	5	6	7	7	8	8
		8d	9	10	11	12	13	13
	130	10d	6	7	8	9	10	10
		8d	10	11	13	14	15	15
	140	10d	7	8	9	10	11	11
		8d	12	13	15	16	18	18
	150	10d	4	4	5	5	6	6
		8d	6	7	8	8	9	9
EXPOSURE C	100	10d	5	6	7	7	8	8
		8d	8	9	11	12	13	13
	110	10d	6	7	8	9	10	10
		8d	10	11	13	14	15	15
	120	10d	7	8	9	10	11	11
		8d	12	14	15	17	18	18
	130	10d	9	10	11	12	13	13
		8d	14	16	18	20	22	22
	140	10d	10	12	13	14	15	15
		8d	16	19	21	23	25	25
	150	10d	12	13	15	16	18	18
		8d	19	21	24	26	29	29

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TABLE R609.4B
WOOD GABLE STUD CONNECTOR LOADS

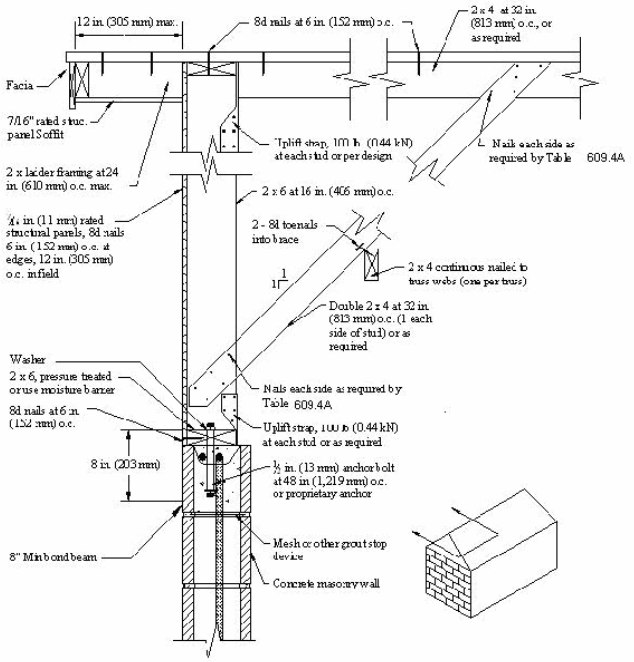
	WIND SPEED	ROOF ZONE	CONNECTOR LOAD VERT	CONNECTOR LOAD HORIZ [1]	WALL ZONE
EXPOSURE B	100	2E	43	16	1E
		2E	43	11	1
	110	2E	53	20	1E
		2E	53	13	1
	120	2E	62	23	1E
		2E	62	15	1
	130	2E	73	27	1E
		2E	73	18	1
	140	2E	85	32	1E
		2E	85	21	1
	150	2E	98	36	1E
		2E	98	24	1
EXPOSURE C	100	2E	61	23	1E
		2E	61	15	1
	110	2E	74	28	1E
		2E	74	18	1
	120	2E	88	33	1E
		2E	88	22	1
	130	2E	103	38	1E
		2E	103	25	1
	140	2E	119	45	1E
		2E	119	30	1
	150	2E	137	51	1E
		2E	137	34	1

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FIGURE R609.4
GABLE END BRACING FOR MASONRY WALLS NOT CONTINUOUS TO THE ROOF DIAPHRAGM



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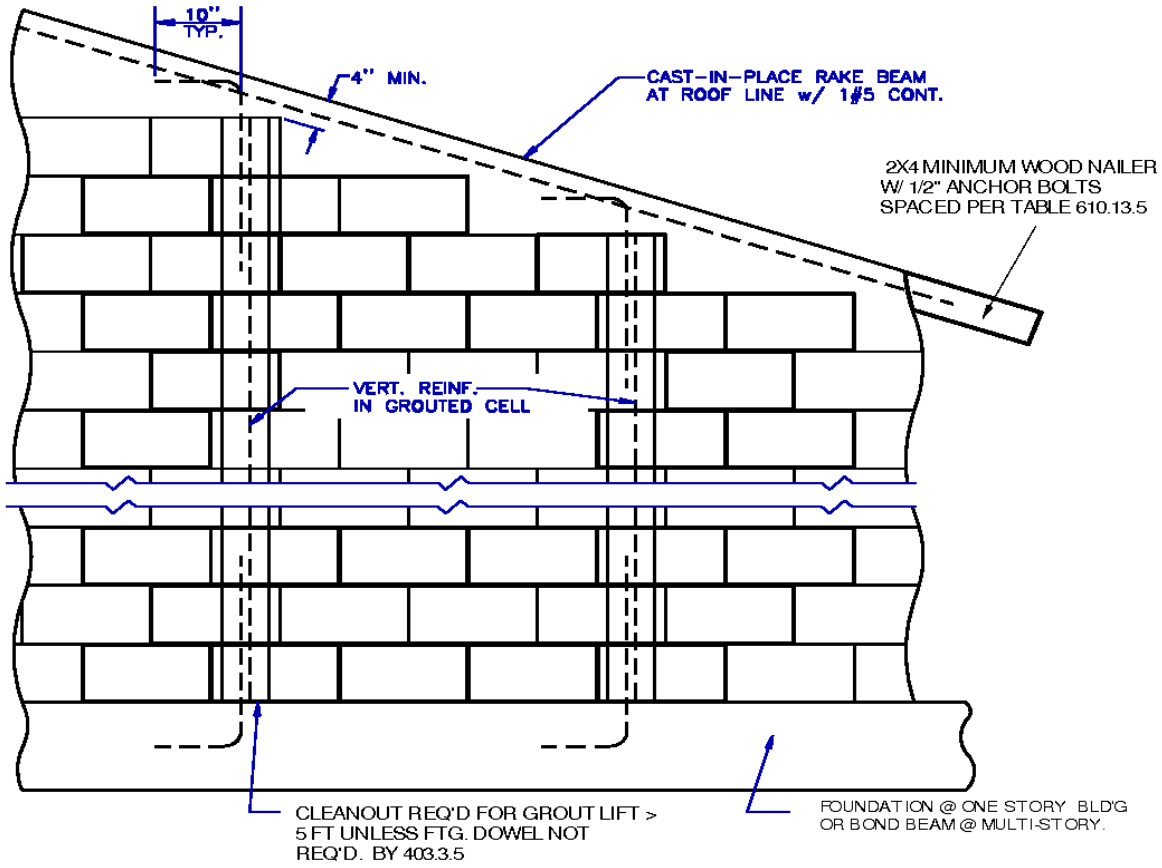


FIGURE R609.4.1
CONTINUOUS GABLE ENDWALL REINFORCEMENT
ONE AND MULTISTORY

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TABLE R609.4.4
ANCHOR BOLT SPACING FOR ATTACHING
2X4 MINIMUM WOOD NAILER TO RAKE BEAM

Required Roof Diaphragm Capacity	½-Inch Anchor Bolt Maximum Spacing
≤ 105	6'-0"
145	5'-0"
195	4'-0"
230	3'-6"
270	3'-0"
325	2'-6"
415	2'-0"
565	1'-6"
700	1'-2"
845	1'-0"

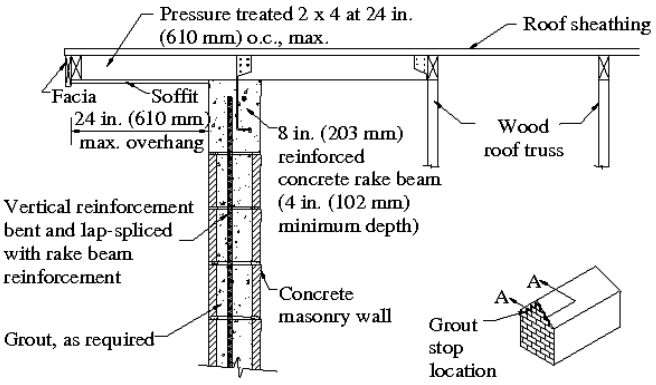


Figure R609.4.5 Gable Overhang

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R609.5 Exterior shearwalls. Each exterior wall shall have the required length of effective shearwall to resist horizontal movement or forces at the ends of diaphragms in conformance with this section.

R609.5.1 Shearwall lengths. The required shearwall segment length shall be as set forth in Table R609.5.1A through Table R609.5.1F as applicable.

R609.5.2 Multi-Story Shearwalls. Shearwall segments in an upper story shall be located directly over and within the length of shearwall segments in the story below. Reinforcement at the ends of shearwall segments shall be continuous from the bond beam of the upper story through the story below.

Exception: Offsetting of vertical reinforcement as set forth in Section R606.9.9.1 shall be permitted.

R609.5.3 The connector load for total shear at the top story wall shall be determined in accordance with Table R609.5.3A and Figure R609.5.3. Transverse connector loads shall be in accordance with Table R 609.5.3B and Figure R609.5.3

R609.5.4 Endwall roof shear loads shall be in accordance with Table R609.5.4.

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TABLE R609.5.1A GRADE 60
REQUIRED SHEARWALL LENGTH PERPENDICULAR TO RIDGE NO. 4 REINFORCEMENT
ROOF ANGLE ≤ 23°

Exp	Wind Speed	TOP STORY BUILDING WIDTH 24	32	40	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 24	32	40	1ST STORY OF 3 STORY BUILDING WIDTH 24	32	40
B	100	0.96	1.37	1.87	2.19	2.96	3.86	3.22	4.33	5.61
	110	1.16	1.66	2.26	2.65	3.59	4.67	3.90	5.24	6.79
	120	1.39	1.98	2.69	3.16	4.27	5.56	4.64	6.24	8.08
	130	1.63	2.32	3.16	3.70	5.01	6.52	5.44	7.32	9.49
	140	1.89	2.69	3.66	4.29	5.81	7.57	6.31	8.49	11.00
	150	2.17	3.09	4.21	4.93	6.67	8.68	7.24	9.75	12.63
C	100	1.14	1.65	2.27	2.89	3.94	5.17	4.50	6.04	7.81
	110	1.38	1.99	2.75	3.50	4.77	6.26	5.44	7.31	9.45
	120	1.64	2.37	3.27	4.17	5.68	7.45	6.48	8.69	11.25
	130	1.93	2.78	3.84	4.89	6.66	8.74	7.60	10.20	13.20
	140	2.24	3.23	4.46	5.67	7.73	10.14	8.81	11.83	15.31
	150	2.57	3.71	5.12	6.51	8.87	11.64	10.12	13.59	17.57

REQUIRED SHEARWALL LENGTH PERPENDICULAR TO RIDGE
NO. 5 REINFORCEMENT
ROOF ANGLE ≤ 23°

Exp	Wind Speed	TOP STORY BUILDING WIDTH 24	32	40	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 24	32	40	1ST STORY OF 3 STORY BUILDING WIDTH 24	32	40
B	100	0.77	1.10	1.49	1.75	2.37	3.08	2.57	3.46	4.48
	110	0.93	1.33	1.81	2.12	2.86	3.73	3.11	4.19	5.43
	120	1.11	1.58	2.15	2.52	3.41	4.44	3.70	4.98	6.46
	130	1.30	1.85	2.52	2.96	4.00	5.21	4.35	5.85	7.58
	140	1.51	2.15	2.93	3.43	4.64	6.04	5.04	6.78	8.79
	150	1.73	2.47	3.36	3.94	5.33	6.94	5.79	7.78	10.09
C	100	0.91	1.32	1.82	2.31	3.15	4.13	3.59	4.82	6.24
	110	1.10	1.59	2.20	2.80	3.81	5.00	4.35	5.84	7.55
	120	1.31	1.90	2.61	3.33	4.54	5.95	5.17	6.94	8.98
	130	1.54	2.22	3.07	3.90	5.32	6.98	6.07	8.15	10.54
	140	1.79	2.58	3.56	4.53	6.17	8.10	7.04	9.45	12.23
	150	2.05	2.96	4.09	5.20	7.09	9.30	8.08	10.85	14.04

Notes:

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.

2. Minimum shear wall segment length shall be 2'-0". A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.

3. Portions of walls with openings shall not be considered part of the shear wall length.

4. Required shearwall lengths normal to the ridge are per lineal foot of building length.

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Multiply tabular values by building length for total shear wall length required.

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TABLE R609.5.1B GRADE 60
REQUIRED SHEARWALL LENGTH PERPENDICULAR TO RIDGE
NO. 4 REINFORCEMENT
ROOF ANGLE 30^0

Exp	Wind Speed	TOP STORY BUILDING WIDTH 24	32	40	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 24	32	40	1ST STORY OF 3 STORY BUILDING WIDTH 24	32	40
B	100	0.99	1.46	2.02	2.11	2.93	3.86	3.08	4.24	5.57
	110	1.20	1.76	2.45	2.56	3.55	4.68	3.73	5.14	6.74
	120	1.42	2.10	2.91	3.04	4.22	5.56	4.44	6.11	8.02
	130	1.67	2.46	3.42	3.57	4.95	6.53	5.21	7.17	9.41
	140	1.94	2.85	3.96	4.14	5.74	7.57	6.04	8.32	10.91
	150	2.22	3.28	4.55	4.76	6.59	8.69	6.94	9.55	12.53
C	100	1.19	1.78	2.51	2.81	3.94	5.25	4.30	5.90	7.72
	110	1.44	2.15	3.03	3.41	4.77	6.35	5.20	7.14	9.34
	120	1.71	2.56	3.61	4.05	5.67	7.56	6.19	8.50	11.12
	130	2.01	3.01	4.24	4.76	6.66	8.87	7.26	9.97	13.05
	140	2.33	3.49	4.91	5.52	7.72	10.28	8.42	11.57	15.13
	150	2.67	4.00	5.64	6.33	8.87	11.81	9.67	13.28	17.37

REQUIRED SHEARWALL LENGTH PERPENDICULAR TO RIDGE
NO. 5 REINFORCEMENT
ROOF ANGLE 30^0

Exp	Wind Speed	TOP STORY BUILDING WIDTH 24	32	40	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 24	32	40	1ST STORY OF 3 STORY BUILDING WIDTH 24	32	40
B	100	0.79	1.16	1.61	1.69	2.34	3.09	2.46	3.39	4.45
	110	0.96	1.41	1.95	2.04	2.83	3.73	2.98	4.10	5.38
	120	1.14	1.67	2.32	2.43	3.37	4.44	3.55	4.88	6.40
	130	1.33	1.97	2.73	2.85	3.95	5.22	4.16	5.73	7.52
	140	1.55	2.28	3.16	3.31	4.59	6.05	4.83	6.64	8.72
	150	1.78	2.62	3.63	3.80	5.26	6.94	5.54	7.63	10.01
C	100	0.95	1.42	2.00	2.25	3.15	4.19	3.43	4.71	6.17
	110	1.15	1.72	2.42	2.72	3.81	5.07	4.15	5.70	7.46
	120	1.37	2.05	2.88	3.24	4.53	6.03	4.94	6.79	8.88
	130	1.60	2.40	3.38	3.80	5.32	7.08	5.80	7.96	10.42
	140	1.86	2.78	3.93	4.41	6.17	8.21	6.73	9.24	12.09
	150	2.14	3.20	4.51	5.06	7.08	9.43	7.72	10.60	13.87

Notes:

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.

2. Minimum shear wall segment length shall be 2'-0". A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at

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exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.

3. Portions of walls with openings shall not be considered part of the shear wall length.

4. Required shearwall lengths normal to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length required.

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TABLE R609.5.1C GRADE 60
REQUIRED SHEARWALL LENGTH PERPENDICULAR TO RIDGE
NO. 4 REINFORCEMENT
ROOF ANGLE 45^0

Exp	Wind Speed	TOP STORY BUILDING WIDTH 24	32	40	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 24	32	40	1ST STORY OF 3 STORY BUILDING WIDTH 24	32	40
B	100	1.26	1.93	2.76	1.26	3.40	4.60	3.43	4.86	6.55
	110	1.52	2.33	3.34	2.89	4.12	5.57	4.15	5.89	7.92
	120	1.81	2.78	3.97	3.43	4.90	6.63	4.94	7.00	9.43
	130	2.13	3.26	4.66	4.03	5.75	7.78	5.80	8.22	11.07
	140	2.47	3.78	5.41	4.67	6.67	9.02	6.73	9.53	12.84
	150	2.83	4.34	6.21	5.36	7.65	10.35	7.72	10.94	14.73
C	100	1.57	2.46	3.59	3.24	4.70	6.45	4.30	5.90	7.72
	110	1.89	2.97	4.34	3.92	5.69	7.81	5.20	7.14	9.34
	120	2.25	3.54	5.17	4.67	6.77	9.29	6.19	8.50	11.12
	130	2.65	4.15	6.07	5.48	7.94	10.90	7.26	9.97	13.05
	140	3.07	4.81	7.03	6.36	9.21	12.65	8.42	11.57	15.13
	150	3.52	5.52	8.08	7.30	10.58	14.52	9.67	13.28	17.37

REQUIRED SHEARWALL LENGTH PERPENDICULAR TO RIDGE
NO. 5 REINFORCEMENT
ROOF ANGLE 45^0

Exp	Wind Speed	TOP STORY BUILDING WIDTH 24	32	40	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 24	32	40	1ST STORY OF 3 STORY BUILDING WIDTH 24	32	40
B	100	1.01	1.54	2.20	1.90	2.72	3.68	2.74	3.88	5.23
	110	1.22	1.86	2.67	2.30	3.29	4.45	3.32	4.70	6.33
	120	1.45	2.22	3.17	2.74	3.91	5.29	3.95	5.59	7.53
	130	1.70	2.60	3.72	3.22	4.59	6.21	4.63	6.57	8.84
	140	1.97	3.02	4.32	3.73	5.33	7.20	5.37	7.61	10.25
	150	2.26	3.46	4.96	4.28	6.11	8.27	6.17	8.74	11.77
C	100	1.25	1.96	2.87	2.59	3.75	5.15	3.80	5.36	7.19
	110	1.51	2.37	3.47	3.13	4.54	6.24	4.60	6.49	8.70
	120	1.80	2.82	4.13	3.73	5.41	7.42	5.47	7.72	10.35
	130	2.11	3.31	4.84	4.38	6.35	8.71	6.42	9.06	12.15
	140	2.45	3.84	5.62	5.08	7.36	10.10	7.45	10.51	14.09
	150	2.81	4.41	6.45	5.83	8.45	11.59	8.55	12.06	16.18

Notes:

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at

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exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.

3. Portions of walls with openings shall not be considered part of the shear wall length.

4. Required shearwall lengths normal to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length required.

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TABLE R609.5.1D GRADE 60
REQUIRED SHEARWALL LENGTH PARALLEL TO RIDGE
NO. 4 REINFORCEMENT PER FOOT OF BUILDING LENGTH
ROOF ANGLE ≤ 23^0

		TOP STORY			1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY			1ST STORY OF 3 STORY		
	Wind	BUILDING WIDTH			BUILDING WIDTH			BUILDING WIDTH		
Exp	Speed	24	32	40	24	32	40	24	32	40
B	100	0.032	0.032	0.031	0.085	0.084	0.084	0.137	0.137	0.137
	110	0.039	0.038	0.038	0.102	0.102	0.102	0.166	0.166	0.166
	120	0.046	0.046	0.045	0.122	0.122	0.121	0.198	0.198	0.197
	130	0.054	0.054	0.053	0.143	0.143	0.142	0.232	0.232	0.231
	140	0.063	0.062	0.061	0.166	0.166	0.165	0.269	0.269	0.268
	150	0.072	0.071	0.071	0.191	0.190	0.189	0.309	0.309	0.308
C	100	0.045	0.044	0.044	0.119	0.118	0.118	0.193	0.192	0.192
	110	0.054	0.054	0.053	0.144	0.143	0.143	0.233	0.233	0.232
	120	0.064	0.064	0.063	0.171	0.171	0.170	0.277	0.277	0.276
	130	0.076	0.075	0.074	0.201	0.200	0.199	0.326	0.325	0.324
	140	0.088	0.087	0.086	0.233	0.232	0.231	0.378	0.377	0.376
	150	0.101	0.100	0.099	0.267	0.267	0.265	0.434	0.433	0.432

REQUIRED SHEARWALL LENGTH PARALLEL TO RIDGE
NO. 5 REINFORCEMENT PER FOOT OF BUILDING LENGTH
ROOF ANGLE ≤ 23^0

		TOP STORY			1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY			1ST STORY OF 3 STORY		
	Wind	BUILDING WIDTH			BUILDING WIDTH			BUILDING WIDTH		
Exp	Speed	24	32	40	24	32	40	24	32	40
B	100	0.025	0.025	0.025	0.068	0.067	0.067	0.110	0.110	0.109
	110	0.031	0.031	0.030	0.082	0.082	0.081	0.133	0.133	0.132
	120	0.037	0.036	0.036	0.097	0.097	0.097	0.158	0.158	0.157
	130	0.043	0.043	0.042	0.114	0.114	0.114	0.186	0.185	0.185
	140	0.050	0.050	0.049	0.133	0.132	0.132	0.215	0.215	0.214
	150	0.057	0.057	0.056	0.152	0.152	0.151	0.247	0.247	0.246
C	100	0.036	0.036	0.035	0.095	0.095	0.094	0.154	0.154	0.153
	110	0.043	0.043	0.042	0.115	0.114	0.114	0.186	0.186	0.185
	120	0.051	0.051	0.051	0.137	0.136	0.136	0.222	0.221	0.221
	130	0.060	0.060	0.059	0.160	0.160	0.159	0.260	0.260	0.259
	140	0.070	0.070	0.069	0.186	0.185	0.185	0.302	0.301	0.300
	150	0.080	0.080	0.079	0.213	0.213	0.212	0.346	0.346	0.345

Notes:

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at

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exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths parallel to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length required.

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TABLE R609.5.1E GRADE 60
REQUIRED SHEARWALL LENGTH PARALLEL TO RIDGE
NO. 4 REINFORCEMENT PER FOOT OF BUILDING LENGTH
ROOF ANGLE 30^0

		TOP STORY			1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY			1ST STORY OF 3 STORY		
	Wind	BUILDING WIDTH			BUILDING WIDTH			BUILDING WIDTH		
Exp	Speed	24	32	40	24	32	40	24	32	40
B	100	0.053	0.061	0.070	0.099	0.107	0.116	0.145	0.153	0.162
	110	0.064	0.074	0.084	0.119	0.129	0.140	0.175	0.185	0.196
	120	0.076	0.088	0.100	0.142	0.154	0.167	0.209	0.221	0.233
	130	0.089	0.103	0.118	0.167	0.181	0.196	0.245	0.259	0.274
	140	0.103	0.119	0.137	0.193	0.210	0.227	0.284	0.300	0.318
	150	0.118	0.137	0.157	0.222	0.241	0.261	0.326	0.345	0.365
C	100	0.074	0.085	0.098	0.138	0.150	0.162	0.203	0.215	0.227
	110	0.089	0.103	0.118	0.167	0.181	0.197	0.246	0.260	0.275
	120	0.106	0.123	0.141	0.199	0.216	0.234	0.292	0.309	0.327
	130	0.124	0.144	0.165	0.234	0.253	0.275	0.343	0.363	0.384
	140	0.144	0.167	0.192	0.271	0.294	0.318	0.398	0.421	0.445
	150	0.166	0.192	0.220	0.311	0.337	0.366	0.457	0.483	0.511

REQUIRED SHEARWALL LENGTH PARALLEL TO RIDGE
NO. 5 REINFORCEMENT PER FOOT OF BUILDING LENGTH
ROOF ANGLE 30^0

		TOP STORY			1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY			1ST STORY OF 3 STORY		
	Wind	BUILDING WIDTH			BUILDING WIDTH			BUILDING WIDTH		
Exp	Speed	24	32	40	24	32	40	24	32	40
	100	0.042	0.049	0.056	0.079	0.085	0.093	0.116	0.122	0.129
	110	0.051	0.059	0.067	0.095	0.103	0.112	0.140	0.148	0.157
	120	0.060	0.070	0.080	0.113	0.123	0.133	0.167	0.176	0.186
	130	0.071	0.082	0.094	0.133	0.144	0.156	0.195	0.207	0.219
	140	0.082	0.095	0.109	0.154	0.167	0.181	0.227	0.240	0.254
	150	0.094	0.109	0.125	0.177	0.192	0.208	0.260	0.275	0.291
C	100	0.059	0.068	0.078	0.110	0.120	0.130	0.162	0.171	0.181
	110	0.071	0.082	0.094	0.134	0.145	0.157	0.196	0.207	0.220
	120	0.085	0.098	0.112	0.159	0.172	0.187	0.234	0.247	0.261
	130	0.099	0.115	0.132	0.187	0.202	0.219	0.274	0.290	0.307
	140	0.115	0.133	0.153	0.217	0.235	0.254	0.318	0.336	0.356
	150	0.132	0.153	0.176	0.249	0.270	0.292	0.365	0.386	0.408

Notes:

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at

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exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths parallel to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length required.

TABLE R609.5.1F GRADE 60
REQUIRED SHEARWALL LENGTH PARALLEL TO RIDGE
NO. 4 REINFORCEMENT PER FOOT OF BUILDING LENGTH
ROOF ANGLE 45^0

		TOP STORY			1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY			1ST STORY OF 3 STORY		
	Wind	BUILDING WIDTH			BUILDING WIDTH			BUILDING WIDTH		
Exp	Speed	24	32	40	24	32	40	24	32	40
B	100	0.070	0.085	0.100	0.116	0.131	0.146	0.163	0.177	0.192
	110	0.085	0.102	0.121	0.141	0.158	0.177	0.197	0.214	0.233
	120	0.101	0.122	0.144	0.168	0.188	0.211	0.234	0.255	0.277
	130	0.119	0.143	0.169	0.197	0.221	0.247	0.275	0.299	0.325
	140	0.138	0.166	0.196	0.228	0.256	0.287	0.319	0.347	0.377
	150	0.158	0.191	0.225	0.262	0.294	0.329	0.366	0.398	0.433
C	100	0.099	0.119	0.140	0.163	0.183	0.205	0.228	0.248	0.270
	110	0.119	0.144	0.170	0.198	0.222	0.248	0.276	0.300	0.326
	120	0.142	0.171	0.202	0.235	0.264	0.295	0.328	0.357	0.388
	130	0.167	0.201	0.237	0.276	0.310	0.347	0.385	0.419	0.456
	140	0.193	0.233	0.275	0.320	0.360	0.402	0.447	0.486	0.529
	150	0.222	0.267	0.316	0.367	0.413	0.461	0.513	0.558	0.607

REQUIRED SHEARWALL LENGTH PARALLEL TO RIDGE
NO. 5 REINFORCEMENT PER FOOT OF BUILDING LENGTH
ROOF ANGLE 45^0

		TOP STORY			1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY			1ST STORY OF 3 STORY		
	Wind	BUILDING WIDTH			BUILDING WIDTH			BUILDING WIDTH		
Exp	Speed	24	32	40	24	32	40	24	32	40
B	100	0.056	0.068	0.080	0.093	0.105	0.117	0.130	0.141	0.154
	110	0.068	0.082	0.097	0.113	0.126	0.141	0.157	0.171	0.186
	120	0.081	0.097	0.115	0.134	0.150	0.168	0.187	0.204	0.221
	130	0.095	0.114	0.135	0.157	0.177	0.197	0.219	0.239	0.260
	140	0.110	0.133	0.157	0.182	0.205	0.229	0.255	0.277	0.301
	150	0.126	0.152	0.180	0.209	0.235	0.263	0.292	0.318	0.346
C	100	0.079	0.095	0.112	0.130	0.147	0.164	0.182	0.198	0.215
	110	0.095	0.115	0.136	0.158	0.177	0.198	0.220	0.240	0.261
	120	0.113	0.137	0.161	0.188	0.211	0.236	0.262	0.285	0.310
	130	0.133	0.160	0.189	0.220	0.248	0.277	0.308	0.335	0.364
	140	0.154	0.186	0.220	0.256	0.287	0.321	0.357	0.388	0.422
	150	0.177	0.213	0.252	0.293	0.330	0.369	0.410	0.446	0.485

Notes:

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1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths parallel to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length required.

TABLE 609.5.1G GRADE 40
REQUIRED SHEARWALL LENGTH PARALLEL TO RIDGE NO. 4 REINFORCEMENT[1,2,3,5]
ROOF ANGLE ≤ 23°

		TOP STORY			1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY			1ST STORY OF 3 STORY		
		BUILDING WIDTH			BUILDING WIDTH			BUILDING WIDTH		
Exp	Wind Speed	24	32	40	24	32	40	24	32	40
B	100	1.42	2.02	2.75	3.23	4.37	5.69	4.74	6.38	8.27
	110	1.72	2.44	3.33	3.90	5.28	6.88	5.74	7.72	10.01
	120	2.04	2.91	3.97	4.65	6.29	8.19	6.83	9.19	11.91
	130	2.40	3.41	4.65	5.45	7.38	9.61	8.01	10.78	13.97
	140	2.78	3.96	5.40	6.33	8.56	11.14	9.29	12.50	16.21
	150	3.19	4.55	6.20	7.26	9.82	12.79	10.67	14.35	18.61
C	100	1.68	2.43	3.35	4.26	5.81	7.62	6.62	8.89	11.50
	110	2.03	2.94	4.05	5.16	7.03	9.22	8.01	10.76	13.92
	120	2.42	3.49	4.82	6.14	8.36	10.97	9.54	12.81	16.57
	130	2.84	4.10	5.66	7.20	9.82	12.88	11.19	15.03	19.44
	140	3.30	4.76	6.56	8.35	11.38	14.94	12.98	17.43	22.55
	150	3.78	5.46	7.53	9.59	13.07	17.15	14.90	20.01	25.89

Notes :
1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A grouted cell with reinforcing steel shall be provided at each end of every shear wall segment. A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths perpendicular to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length required.
5. Shearwall lengths for no. 4 reinforcement are based on shearwall segment height of 80 inches. And shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment lengths and heights.
6. Shearwall lengths for no. 5 reinforcement are based on shearwall segment height of 96 inches and shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment height lengths and heights.

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TABLE 609.5.1H GRADE 40
REQUIRED SHEARWALL LENGTH PARALLEL TO RIDGE GRADE 40 NO. 5 REINFORCEMENT[1,2,3,6]

ROOF ANGLE ≤ 23°

Exp	Wind Speed	TOP STORY BUILDING WIDTH 24	TOP STORY BUILDING WIDTH 32	TOP STORY BUILDING WIDTH 40	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 24	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 32	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 40	1ST STORY OF 3 STORY BUILDING WIDTH 24	1ST STORY OF 3 STORY BUILDING WIDTH 32	1ST STORY OF 3 STORY BUILDING WIDTH 40
B	100	1.14	1.62	2.21	2.59	3.50	4.56	3.80	5.12	6.63
	110	1.38	1.96	2.67	3.13	4.24	5.52	4.60	6.19	8.02
	120	1.64	2.33	3.18	3.73	5.04	6.57	5.48	7.37	9.55
	130	1.92	2.74	3.73	4.37	5.92	7.71	6.43	8.65	11.21
	140	2.23	3.18	4.33	5.07	6.86	8.94	7.45	10.03	13.00
	150	2.56	3.65	4.97	5.82	7.88	10.26	8.56	11.51	14.92
C	100	1.35	1.95	2.69	3.42	4.66	6.11	5.31	7.13	9.23
	110	1.63	2.36	3.25	4.13	5.64	7.40	6.43	8.63	11.16
	120	1.94	2.80	3.87	4.92	6.71	8.80	7.65	10.27	13.29
	130	2.28	3.29	4.54	5.77	7.87	10.33	8.98	12.05	15.59
	140	2.64	3.82	5.26	6.70	9.13	11.98	10.41	13.98	18.08
	150	3.03	4.38	6.04	7.69	10.48	13.75	11.95	16.05	20.76

Notes :

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A grouted cell with reinforcing steel shall be provided at each end of every shear wall segment. A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths perpendicular to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length required.
5. Shearwall lengths for no. 4 reinforcement are based on shearwall segment height of 80 inches. And shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment lengths and heights.
6. Shearwall lengths for no. 5 reinforcement are based on shearwall segment height of 96 inches and shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment height lengths and heights.

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TABLE 609.5.1I GRADE 40
REQUIRED SHEARWALL LENGTH PARALLEL TO RIDGE NO. 4 REINFORCEMENT[1,2,3,5]
ROOF ANGLE 30^0

Exp	Wind Speed	TOP STORY BUILDING WIDTH 24	TOP STORY BUILDING WIDTH 32	TOP STORY BUILDING WIDTH 40	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 24	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 32	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 40	1ST STORY OF 3 STORY BUILDING WIDTH 24	1ST STORY OF 3 STORY BUILDING WIDTH 32	1ST STORY OF 3 STORY BUILDING WIDTH 40
B	100	1.46	2.14	2.98	3.11	4.32	5.69	4.54	6.25	8.20
	110	1.76	2.59	3.60	3.77	5.22	6.89	5.50	7.57	9.92
	120	2.10	3.09	4.29	4.48	6.21	8.19	6.54	9.00	11.81
	130	2.46	3.62	5.03	5.26	7.29	9.62	7.67	10.57	13.86
	140	2.85	4.20	5.84	6.10	8.46	11.15	8.90	12.25	16.07
	150	3.28	4.82	6.70	7.01	9.71	12.80	10.22	14.07	18.45
C	100	1.75	2.62	3.69	4.15	5.80	7.73	6.33	8.69	11.37
	110	2.12	3.17	4.47	5.02	7.02	9.35	7.66	10.52	13.76
	120	2.52	3.77	5.32	5.97	8.36	11.13	9.11	12.51	16.37
	130	2.96	4.43	6.24	7.01	9.81	13.06	10.70	14.69	19.22
	140	3.43	5.14	7.24	8.12	11.37	15.15	12.41	17.03	22.29
	150	3.94	5.90	8.31	9.33	13.06	17.39	14.24	19.55	25.58

Notes :

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A grouted cell with reinforcing steel shall be provided at each end of every shear wall segment. A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths perpendicular to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length required.
5. Shearwall lengths for no. 4 reinforcement are based on shearwall segment height of 80 inches. And shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment lengths and heights.
6. Shearwall lengths for no. 5 reinforcement are based on shearwall segment height of 96 inches and shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment height lengths and heights.

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TABLE 609.5.1J GRADE 40
REQUIRED SHEARWALL LENGTH PARALLEL TO RIDGE NO. 5 REINFORCEMENT[1,2,3,6]
ROOF ANGLE 30^0

Exp	Wind Speed	TOP STORY BUILDING WIDTH			1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH			1ST STORY OF 3 STORY BUILDING WIDTH		
		24	32	40	24	32	40	24	32	40
B	100	1.17	1.72	2.39	2.50	3.46	4.56	3.64	5.01	6.58
	110	1.41	2.08	2.89	3.02	4.19	5.52	4.41	6.07	7.96
	120	1.68	2.48	3.44	3.60	4.98	6.57	5.24	7.22	9.47
	130	1.97	2.91	4.04	4.22	5.85	7.71	6.15	8.47	11.11
	140	2.29	3.37	4.68	4.89	6.78	8.95	7.14	9.83	12.89
	150	2.63	3.87	5.37	5.62	7.79	10.27	8.19	11.28	14.80
C	100	1.40	2.10	2.96	3.32	4.65	6.20	5.08	6.97	9.12
	110	1.70	2.54	3.58	4.02	5.63	7.50	6.14	8.43	11.03
	120	2.02	3.03	4.27	4.79	6.70	8.92	7.31	10.04	13.13
	130	2.37	3.55	5.01	5.62	7.87	10.47	8.58	11.78	15.41
	140	2.75	4.12	5.81	6.52	9.12	12.15	9.95	13.66	17.87
	150	3.16	4.73	6.66	7.48	10.47	13.94	11.42	15.68	20.52

Notes :

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A grouted cell with reinforcing steel shall be provided at each end of every shear wall segment. A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths perpendicular to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length required.
5. Shearwall lengths for no. 4 reinforcement are based on shearwall segment height of 80 inches. And shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment lengths and heights.
6. Shearwall lengths for no. 5 reinforcement are based on shearwall segment height of 96 inches and shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment height lengths and heights.

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TABLE 609.5.1K GRADE 40
REQUIRED SHEARWALL LENGTH PARALLEL TO RIDGE NO. 4 REINFORCEMENT[1,2,3,5]
ROOF ANGLE 45[0]

Exp	Wind Speed	TOP STORY BUILDING WIDTH 24	TOP STORY BUILDING WIDTH 32	TOP STORY BUILDING WIDTH 40	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 24	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 32	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 40	1ST STORY OF 3 STORY BUILDING WIDTH 24	1ST STORY OF 3 STORY BUILDING WIDTH 32	1ST STORY OF 3 STORY BUILDING WIDTH 40
B	100	1.85	2.84	4.06	1.85	5.01	6.78	5.06	7.16	9.65
	110	2.24	3.44	4.92	4.25	6.06	8.20	6.12	8.67	11.67
	120	2.67	4.09	5.85	5.06	7.22	9.76	7.28	10.32	13.89
	130	3.13	4.80	6.87	5.93	8.47	11.45	8.54	12.11	16.30
	140	3.63	5.57	7.97	6.88	9.82	13.28	9.91	14.04	18.90
	150	4.17	6.39	9.14	7.90	11.27	15.25	11.38	16.12	21.70
C	100	2.31	3.62	5.29	4.78	6.92	9.50	6.33	8.69	11.37
	110	2.79	4.38	6.40	5.78	8.38	11.50	7.66	10.52	13.76
	120	3.32	5.21	7.61	6.88	9.97	13.68	9.11	12.51	16.37
	130	3.90	6.11	8.93	8.07	11.70	16.06	10.70	14.69	19.22
	140	4.52	7.09	10.36	9.36	13.57	18.63	12.41	17.03	22.29
	150	5.19	8.14	11.89	10.75	15.58	21.38	14.24	19.55	25.58

Notes :

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A grouted cell with reinforcing steel shall be provided at each end of every shear wall segment. A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths perpendicular to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall required.
5. Shearwall lengths for no. 4 reinforcement are based on shearwall segment height of 80 inches. And shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment lengths and heights.
6. Shearwall lengths for no. 5 reinforcement are based on shearwall segment height of 96 inches and shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment height lengths and heights.

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TABLE 609.5.1L GRADE 40
REQUIRED SHEARWALL LENGTH PARALLEL TO RIDGE NO. 5 REINFORCEMENT[1,2,3,6]
ROOF ANGLE 45^0

Exp	Wind Speed	TOP STORY BUILDING WIDTH 24	TOP STORY BUILDING WIDTH 32	TOP STORY BUILDING WIDTH 40	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 24	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 32	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 40	1ST STORY OF 3 STORY BUILDING WIDTH 24	1ST STORY OF 3 STORY BUILDING WIDTH 32	1ST STORY OF 3 STORY BUILDING WIDTH 40
B	100	1.49	2.28	3.26	2.82	4.02	5.44	4.05	5.75	7.74
	110	1.80	2.76	3.94	3.41	4.86	6.58	4.91	6.95	9.36
	120	2.14	3.28	4.69	4.06	5.79	7.83	5.84	8.27	11.14
	130	2.51	3.85	5.51	4.76	6.79	9.19	6.85	9.71	13.07
	140	2.91	4.46	6.39	5.52	7.88	10.65	7.95	11.26	15.16
	150	3.35	5.12	7.33	6.34	9.04	12.23	9.12	12.93	17.40
C	100	1.85	2.90	4.24	3.83	5.55	7.62	5.62	7.93	10.63
	110	2.24	3.51	5.13	4.64	6.72	9.22	6.80	9.59	12.87
	120	2.66	4.18	6.10	5.52	8.00	10.97	8.09	11.42	15.31
	130	3.13	4.90	7.16	6.48	9.38	12.88	9.50	13.40	17.97
	140	3.62	5.68	8.31	7.51	10.88	14.94	11.01	15.54	20.84
	150	4.16	6.53	9.54	8.62	12.49	17.15	12.64	17.84	23.92

Notes :

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A grouted cell with reinforcing steel shall be provided at each end of every shear wall segment. A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths perpendicular to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length.
5. Shearwall lengths for no. 4 reinforcement are based on shearwall segment height of 80 inches. And shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment lengths and heights.
6. Shearwall lengths for no. 5 reinforcement are based on shearwall segment height of 96 inches and shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment height lengths and heights.

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TABLE 609.5.1M GRADE 40
REQUIRED SHEARWALL LENGTH PERPENDICULAR TO RIDGE GRADE 40 NO. 4 REINFORCEMENT PER FOOT OF BUILDING LENGTH[1,2,3,4,5]
ROOF ANGLE ≤ 23°

		TOP STORY			1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY			1ST STORY OF 3 STORY		
		BUILDING WIDTH			BUILDING WIDTH			BUILDING WIDTH		
Exp	Wind Speed	24	32	40	24	32	40	24	32	40
B	100	0.047	0.047	0.046	0.125	0.124	0.124	0.202	0.202	0.202
	110	0.057	0.057	0.056	0.151	0.151	0.150	0.245	0.245	0.244
	120	0.068	0.067	0.067	0.180	0.179	0.178	0.291	0.291	0.290
	130	0.079	0.079	0.078	0.211	0.210	0.209	0.342	0.342	0.341
	140	0.092	0.092	0.091	0.244	0.244	0.243	0.397	0.396	0.395
	150	0.106	0.105	0.104	0.281	0.280	0.279	0.455	0.455	0.454
C	100	0.066	0.066	0.065	0.175	0.174	0.174	0.284	0.283	0.283
	110	0.080	0.079	0.078	0.212	0.211	0.210	0.343	0.343	0.342
	120	0.095	0.094	0.093	0.252	0.251	0.250	0.409	0.408	0.407
	130	0.111	0.111	0.109	0.295	0.295	0.294	0.480	0.479	0.478
	140	0.129	0.128	0.127	0.343	0.342	0.340	0.556	0.556	0.554
	150	0.148	0.147	0.146	0.393	0.393	0.391	0.639	0.638	0.636

Notes :

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A grouted cell with reinforcing steel shall be provided at each end of every shear wall segment. A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths perpendicular to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length required.
5. Shearwall lengths for no. 4 reinforcement are based on shearwall segment height of 80 inches. And shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment lengths and heights.
6. Shearwall lengths for no. 5 reinforcement are based on shearwall segment height of 96 inches and shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment height lengths and heights.

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TABLE 609.5.1N GRADE 40
REQUIRED SHEARWALL LENGTH PERPENDICULAR TO RIDGE GRADE 40 NO. 5 REINFORCEMENT PER FOOT OF BUILDING LENGTH[1,2,3,4,6]

ROOF ANGLE ≤ 23°

		TOP STORY			1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY			1ST STORY OF 3 STORY		
		BUILDING WIDTH			BUILDING WIDTH			BUILDING WIDTH		
Exp	Wind Speed	24	32	40	24	32	40	24	32	40
B	100	0.038	0.037	0.037	0.100	0.100	0.099	0.162	0.162	0.162
	110	0.046	0.045	0.045	0.121	0.121	0.120	0.196	0.196	0.196
	120	0.054	0.054	0.053	0.144	0.144	0.143	0.234	0.233	0.233
	130	0.064	0.063	0.063	0.169	0.169	0.168	0.274	0.274	0.273
	140	0.074	0.073	0.073	0.196	0.196	0.195	0.318	0.318	0.317
	150	0.085	0.084	0.083	0.225	0.225	0.224	0.365	0.365	0.364
C	100	0.053	0.053	0.052	0.140	0.140	0.139	0.228	0.227	0.227
	110	0.064	0.064	0.063	0.170	0.169	0.169	0.275	0.275	0.274
	120	0.076	0.076	0.075	0.202	0.201	0.201	0.328	0.327	0.326
	130	0.089	0.089	0.088	0.237	0.236	0.235	0.385	0.384	0.383
	140	0.104	0.103	0.102	0.275	0.274	0.273	0.446	0.446	0.444
	150	0.119	0.118	0.117	0.316	0.315	0.313	0.512	0.511	0.510

Notes :

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A grouted cell with reinforcing steel shall be provided at each end of every shear wall segment. A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths perpendicular to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length required.
5. Shearwall lengths for no. 4 reinforcement are based on shearwall segment height of 80 inches. And shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment lengths and heights.
6. Shearwall lengths for no. 5 reinforcement are based on shearwall segment height of 96 inches and shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment height lengths and heights.

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TABLE 609.5.1O GRADE 40
REQUIRED SHEARWALL LENGTH PERPENDICULAR TO RIDGE NO. 4 REINFORCEMENT PER FOOT OF BUILDING LENGTH[1,2,3,4,5]

ROOF ANGLE 30

Exp	Wind Speed	TOP STORY BUILDING WIDTH 24	TOP STORY BUILDING WIDTH 32	TOP STORY BUILDING WIDTH 40	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 24	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 32	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 40	1ST STORY OF 3 STORY BUILDING WIDTH 24	1ST STORY OF 3 STORY BUILDING WIDTH 32	1ST STORY OF 3 STORY BUILDING WIDTH 40
B	100	0.077	0.090	0.103	0.145	0.158	0.171	0.213	0.226	0.239
	110	0.094	0.108	0.124	0.176	0.191	0.207	0.258	0.273	0.289
	120	0.111	0.129	0.148	0.209	0.227	0.246	0.307	0.325	0.344
	130	0.131	0.151	0.174	0.246	0.266	0.288	0.360	0.381	0.403
	140	0.152	0.176	0.201	0.285	0.309	0.335	0.418	0.442	0.468
	150	0.174	0.202	0.231	0.327	0.354	0.384	0.480	0.507	0.537
C	100	0.108	0.126	0.144	0.204	0.221	0.239	0.299	0.316	0.335
	110	0.131	0.152	0.174	0.247	0.267	0.290	0.362	0.383	0.405
	120	0.156	0.181	0.207	0.293	0.318	0.345	0.431	0.455	0.482
	130	0.183	0.212	0.243	0.344	0.373	0.404	0.505	0.534	0.565
	140	0.213	0.246	0.282	0.399	0.433	0.469	0.586	0.620	0.656
	150	0.244	0.283	0.324	0.458	0.497	0.538	0.673	0.711	0.753

Notes :

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A grouted cell with reinforcing steel shall be provided at each end of every shear wall segment. A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths perpendicular to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length required.
5. Shearwall lengths for no. 4 reinforcement are based on shearwall segment height of 80 inches. And shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment lengths and heights.
6. Shearwall lengths for no. 5 reinforcement are based on shearwall segment height of 96 inches and shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment height lengths and heights.

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TABLE 609.5.1P GRADE 40
REQUIRED SHEARWALL LENGTH PERPENDICULAR TO RIDGE NO. 5 REINFORCEMENT PER FOOT OF BUILDING LENGTH[1,2,3,4,6]

ROOF ANGLE 30

Exp	Wind Speed	TOP STORY BUILDING WIDTH 24	TOP STORY BUILDING WIDTH 32	TOP STORY BUILDING WIDTH 40	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 24	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 32	1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY BUILDING WIDTH 40	1ST STORY OF 3 STORY BUILDING WIDTH 24	1ST STORY OF 3 STORY BUILDING WIDTH 32	1ST STORY OF 3 STORY BUILDING WIDTH 40
B	100	0.062	0.072	0.082	0.117	0.126	0.137	0.171	0.181	0.191
	110	0.075	0.087	0.100	0.141	0.153	0.166	0.207	0.219	0.232
	120	0.089	0.103	0.119	0.168	0.182	0.197	0.246	0.260	0.276
	130	0.105	0.121	0.139	0.197	0.214	0.231	0.289	0.306	0.323
	140	0.122	0.141	0.161	0.228	0.248	0.268	0.335	0.355	0.375
	150	0.140	0.162	0.185	0.262	0.284	0.308	0.385	0.407	0.431
C	100	0.087	0.101	0.115	0.163	0.177	0.192	0.240	0.254	0.268
	110	0.105	0.122	0.140	0.198	0.214	0.232	0.290	0.307	0.325
	120	0.125	0.145	0.166	0.235	0.255	0.276	0.345	0.365	0.386
	130	0.147	0.170	0.195	0.276	0.299	0.324	0.405	0.429	0.453
	140	0.170	0.197	0.226	0.320	0.347	0.376	0.470	0.497	0.526
	150	0.196	0.227	0.260	0.368	0.399	0.432	0.540	0.571	0.604

Notes :

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A grouted cell with reinforcing steel shall be provided at each end of every shear wall segment. A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths perpendicular to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length.
5. Shearwall lengths for no. 4 reinforcement are based on shearwall segment height of 80 inches. And shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment lengths and heights.
6. Shearwall lengths for no. 5 reinforcement are based on shearwall segment height of 96 inches and shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment height lengths and heights.

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TABLE 609.5.1Q GRADE 40
REQUIRED SHEARWALL LENGTH PERPENDICULAR TO RIDGE NO. 4 REINFORCEMENT PER FOOT OF BUILDING LENGTH[1,2,3,4,5]
ROOF ANGLE 450

		TOP STORY			1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY			1ST STORY OF 3 STORY		
	Wind	BUILDING WIDTH			BUILDING WIDTH			BUILDING WIDTH		
Exp	Speed	24	32	40	24	32	40	24	32	40
B	100	0.104	0.125	0.147	0.172	0.193	0.215	0.240	0.261	0.283
	110	0.125	0.151	0.178	0.208	0.233	0.261	0.290	0.315	0.343
	120	0.149	0.180	0.212	0.247	0.278	0.310	0.345	0.375	0.408
	130	0.175	0.211	0.249	0.290	0.326	0.364	0.405	0.441	0.479
	140	0.203	0.244	0.289	0.336	0.378	0.422	0.469	0.511	0.555
	150	0.233	0.281	0.332	0.386	0.434	0.485	0.539	0.587	0.638
C	100	0.145	0.175	0.207	0.240	0.270	0.302	0.336	0.365	0.397
	110	0.176	0.212	0.250	0.291	0.327	0.365	0.406	0.442	0.481
	120	0.209	0.252	0.298	0.346	0.389	0.435	0.484	0.526	0.572
	130	0.245	0.296	0.349	0.406	0.457	0.510	0.567	0.618	0.672
	140	0.285	0.343	0.405	0.471	0.530	0.592	0.658	0.716	0.779
	150	0.327	0.393	0.465	0.541	0.608	0.680	0.756	0.822	0.894

Notes :

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A grouted cell with reinforcing steel shall be provided at each end of every shear wall segment. A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths perpendicular to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length.
5. Shearwall lengths for no. 4 reinforcement are based on shearwall segment height of 80 inches. And shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment lengths and heights.
6. Shearwall lengths for no. 5 reinforcement are based on shearwall segment height of 96 inches and shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment height lengths and heights.

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TABLE 609.5.1R GRADE 40
REQUIRED SHEARWALL LENGTH PERPENDICULAR TO RIDGE NO. 5 REINFORCEMENT PER FOOT OF BUILDING LENGTH[1,2,3,4,6]

ROOF ANGLE 45°

Exp	Wind Speed	TOP STORY			1ST STORY OF 2 STORY OR 2ND STORY OF 3 STORY			1ST STORY OF 3 STORY		
		BUILDING WIDTH			BUILDING WIDTH			BUILDING WIDTH		
		24	32	40	24	32	40	24	32	40
B	100	0.083	0.100	0.118	0.138	0.155	0.173	0.192	0.209	0.227
	110	0.100	0.121	0.143	0.166	0.187	0.209	0.232	0.253	0.275
	120	0.120	0.144	0.170	0.198	0.223	0.249	0.277	0.301	0.327
	130	0.140	0.169	0.200	0.232	0.261	0.292	0.325	0.353	0.384
	140	0.163	0.196	0.232	0.270	0.303	0.339	0.376	0.410	0.445
	150	0.187	0.225	0.266	0.310	0.348	0.389	0.432	0.470	0.511
C	100	0.116	0.140	0.166	0.193	0.217	0.242	0.269	0.293	0.319
	110	0.141	0.170	0.201	0.233	0.262	0.293	0.326	0.355	0.386
	120	0.168	0.202	0.239	0.278	0.312	0.349	0.388	0.422	0.459
	130	0.197	0.237	0.280	0.326	0.366	0.409	0.455	0.495	0.539
	140	0.228	0.275	0.325	0.378	0.425	0.475	0.528	0.575	0.625
	150	0.262	0.316	0.373	0.434	0.488	0.545	0.606	0.660	0.717

Notes :

1. The cumulative shear wall segment length for each side of the building shall be equal to or greater than the tabular shear wall length required. If the required shear wall segment length provided is not continuous the total shear wall length required shall be increased by 8" for each additional shear wall segment on a side.
2. Minimum shear wall segment length shall be 2'-0". A grouted cell with reinforcing steel shall be provided at each end of every shear wall segment. A minimum length of 24 inches (610 mm) of solid wall segment, extending the full height of each wall, shall be provided at exterior corners of exterior walls. A fully grouted cell with reinforcing steel shall be provided at each end of every shear wall segment.
3. Portions of walls with openings shall not be considered part of the shear wall length.
4. Required shearwall lengths perpendicular to the ridge are per lineal foot of building length. Multiply tabular values by building length for total shear wall length.
5. Shearwall lengths for no. 4 reinforcement are based on shearwall segment height of 80 inches. And shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment lengths and heights.
6. Shearwall lengths for no. 5 reinforcement are based on shearwall segment height of 96 inches and shearwall segment length of 24 inches. Multiply tabular length by shearwall adjustment factor from Table 609.5.1S for other segment height lengths and heights.

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TABLE 609.5.1S
SHEARWALL LENGTH ADJUSTMENT FACTOR GRADE 40 STEEL

Area of Steel, in^2	MAX SEGMENT HT (in.)[1]	MINIMUM SEGMENT LENGTH (inches)						
		24	32	40	48	56	64	72
0.20 (No. 4)	80	1.00	0.94	0.90	0.87	0.85	0.84	0.82
	88	1.09	1.02	0.98	0.95	0.93	0.91	0.90
	96	1.19	1.11	1.07	1.03	1.01	0.99	0.98
	104	1.28	1.20	1.15	1.11	1.09	1.07	1.05
0.31 (No. 5)	80	1.00	0.93	0.89	0.87	0.85	0.83	0.82
	88	1.10	1.02	0.98	0.95	0.93	0.91	0.90
	96	1.00	0.93	0.89	0.87	0.85	0.83	0.82
	104	1.29	1.20	1.15	1.11	1.09	1.07	1.05

1. Segment height is the distance from the bottom of the segment to the top of the tallest opening adjacent to the segment.

TABLE R609.5.3A
TOTAL SHEAR AT TOP OF TOP STORY WALL[1, 2]

EXPO-SURE	WIND SPEED	VEL PRESSURE	ROOF ANGLE UP TO 45 BUILDING WIDTH			ROOF ANGLE UP TO 30 BUILDING WIDTH		
			24	32	40	24	32	40
B	100	15.2	2022	3113	4456	1568	2319	3215
	110	18.4	2447	3767	5392	1897	2806	3890
	120	22.0	2912	4483	6417	2258	3339	4630
	130	25.8	3418	5262	7531	2649	3919	5433
	140	29.9	3964	6102	8734	3073	4545	6301
	150	34.3	4550	7005	10027	3527	5218	7234
C	100	21.4	2835	4365	6248	2198	3251	4507
	110	25.9	3431	5282	7560	2660	3934	5454
	120	30.8	4083	6286	8997	3165	4682	6491
	130	36.1	4792	7377	10559	3715	5495	7618
	140	41.9	5557	8555	12246	4308	6372	8835
	150	48.1	6380	9821	14058	4946	7315	10142

1. Loads are based on 10' wall height. Multiply by 0.9 for 8' wall heights
2. To determine individual connector load parallel to the wall) divide shear value by the number of connectors (Load F1 from Figure 609.5.3)

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TABLE R609.5.3B
TRANSVERSE CONNECTOR LOAD (F2)[1, 2]

EXPO-SURE	WIND SPEED	VEL PRESSURE	ROOF ANGLE < 23°		R00F ANGLE > 23°
			Edge Zone	Int Zone	
B	100	15.2	394	319	289
	110	18.4	477	386	349
	120	22.0	568	460	416
	130	25.8	667	539	488
	140	29.9	773	626	566
	150	34.3	887	718	650
C	100	21.4	553	448	405
	110	25.9	669	541	490
	120	30.8	796	644	583
	130	36.1	935	756	684
	140	41.9	1084	877	793
	150	48.1	1244	1007	911

1. Loads are based on 10' wall height. Multiply by 0.8 for 8' wall height.
2. F2 load in accordance with Figure R609.5.3

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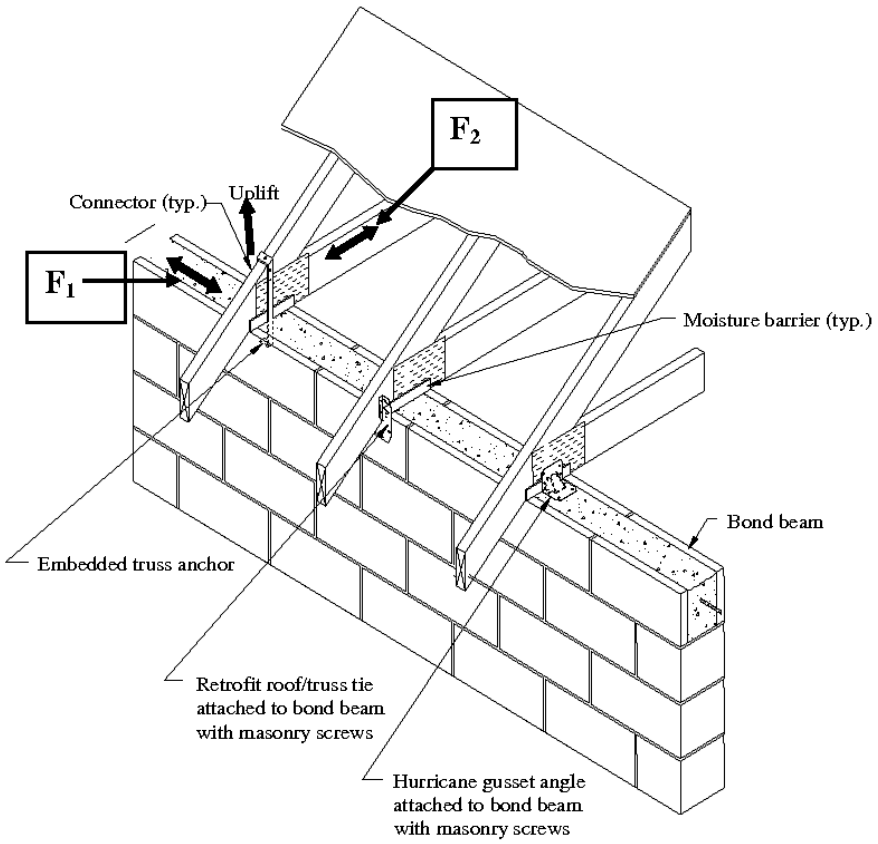


FIGURE R609.5.3
TYPICAL ROOF TO WALL CONNECTIONS

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TABLE R609.5.4
END WALL ROOF SHEAR PER FOOT OF BUILDING LENGTH

EXP	WIND SPEED	POUNDS PER FT OF BLDG LENGTH FOR 23° ROOF SLOPE			POUNDS PER FT OF BLDG LENGTH FOR 30° ROOF SLOPE			POUNDS PER FT OF BLDG LENGTH FOR 45° ROOF SLOPE		
		BUILDING WIDTH			BUILDING WIDTH			BUILDING WIDTH		
		24	32	40	24	32	40	24	32	40
B	100	43.6	42.8	43.1	76.9	87.8	100.1	104.4	123.8	145.1
	110	52.7	51.8	52.2	93.1	106.3	121.1	126.3	149.8	175.5
	120	62.8	61.7	62.1	110.8	126.5	144.2	150.3	178.3	208.9
	130	73.7	72.4	72.8	130.0	148.5	169.2	176.4	209.2	245.1
	140	85.4	84.0	84.5	150.8	172.2	196.2	204.6	242.6	284.3
	150	98.1	96.4	97.0	173.1	197.7	225.3	234.8	278.5	326.4
C	100	61.1	60.1	60.4	107.9	123.2	140.4	146.3	173.6	203.4
	110	73.9	72.7	73.1	130.5	149.0	169.9	177.1	210.0	246.1
	120	88.0	86.5	87.0	155.3	177.4	202.1	210.7	249.9	292.9
	130	103.3	101.5	102.1	182.3	208.1	237.2	247.3	293.3	343.7
	140	119.8	117.7	118.4	211.4	241.4	275.1	286.8	340.2	398.6
	150	137.5	135.2	136.0	242.7	277.1	315.8	329.2	390.5	457.6

Notes:
1. Tabular values between 23° and 30° and between 30° and 45° are permitted to be interpolated.
2. Multiply by total building length for total end wall shear. Divide total shear by building width for required shear capacity of roof diaphragm and connections

R609.6 Assemblies and beams spanning openings.

R609.6.1 Pre-engineered Assemblies for Masonry Walls.

R609.6.1.1 Unreinforced masonry units above an opening and 8 inch high bond beams above an opening shall be supported by an assembly.

R609.6.1.2 Pre-engineered assemblies shall be selected from a manufacturer's approved schedule or other approved tables for the load capacities based on the appropriate minimum gravity load carrying capacities established in Tables 609.6.1.2(1), 609.6.1.2(2), and 609.6.1.2(3).

R609.6.1.3 Pre-engineered assemblies may function as a bond beam over an opening provided that:

1. **The bond beam reinforcement is continuous through the assembly.**
2. **The assembly has an uplift rating that equals or exceeds the appropriate value stipulated in Table 609.6.1.2(1) if the lintel directly supports a roof.**

EXCEPTION: If the reinforcement in the top of the assembly is equal to or greater than the reinforcement required in the bottom of the assembly by the manufacturer, uplift need not be considered.

R609.6.1.4 Pre-engineered assemblies spanning openings shall extend a minimum of 4 inches nominal past each side of the opening.

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TABLE R609.6.1.2(1)
SUPERIMPOSED LOADS
MINIMUM RATED LOAD CAPACITY OF 6 INCH OR 8 INCH THICK
PRE-ENGINEERED ASSEMBLIES SPANNING OPENINGS OF
ONE STORY AND TOP STORY OF MULTI-STORY BUILDINGS

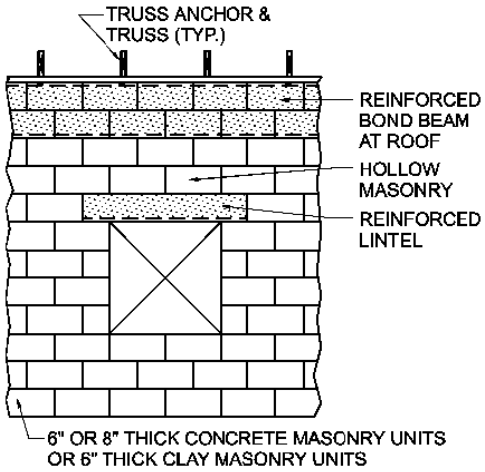
Roof Span (ft)	Uplift (plf)			
	Gravity (plf)	100 mph	120 mph	140 mph
42	150	85	112	165
12	330	152	204	305
24	600	262	351	525
36	870	374	502	745
44	1,050	451	605	900
52	1,230	530	710	1,055
60	1,410	609	816	1,215

NOTES:

1. All loads are superimposed at the top of the wall and do not include dead loads of the bond beam or masonry above the assembly. Add 100% of additional dead loads to the gravity loads and subtract 85% of these loads from the uplift loads.
2. Use 4-foot roof span for assemblies in endwalls.
3. For total roof dead loads over 10 psf, increase gravity loads by the following amount:

$$\frac{\text{(Roof Dead Load - 10 psf) x (Roof Span + 2 ft)}}{2}$$

4. Uplift rating is required only if a pre-engineered assembly is used to directly support a roof. (See Section R609.6.1.3(2) for cases where uplift need not be considered.)



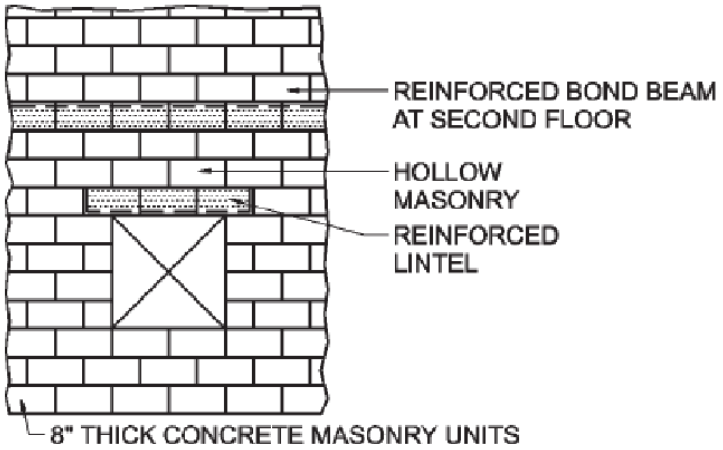
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TABLE R609.6.1.2(2)
SUPERIMPOSED LOADS MINIMUM RATED LOAD CAPACITY OF 8 INCH THICK PRE-ENGINEERED ASSEMBLIES SPANNING OPENINGS OF BOTTOM STORY OF TWO-STORY BUILDINGS, SECOND AND BOTTOM STORIES OF THREE-STORY BUILDINGS—WOOD FLOOR SYSTEM

Floor[1] Span (ft)		Minimum Rated Gravity Load Assembly (plf)				
		Assembly Clear Span (ft)				
	4	6	8	12	16	20
4[2]	210	260	310	410	510	610
12	430	480	530	630	730	830
24	760	810	860	960	1,060	1,160
36	1,090	1,140	1,190	1,290	1,390	1,490
44	1,310	1,360	1,410	1,510	1,610	1,710
52	1,530	1,580	1,630	1,730	1,830	1,930
60	1,750	1,800	1,850	1,950	2,050	2,150

NOTES:

1. For a wall supporting floors on both sides, enter Table with the sum of the 2 full spans. NOTE: Tabular values are for 1/2 the load of the full span shown.
2. Use 4 ft building width for assemblies in walls not supporting floors (normally endwalls and interior masonry walls and shearwalls).
3. The values in this table may be interpolated.
4. These loads take into account the dead load of any masonry in the wall above the assembly and live and dead loads of the roof and floor supported. Dead load of the assembly is not included in the table and if not included in the pre-engineered concrete design must be added to the loads in the table.
5. This table is applicable for all roof dead loads.



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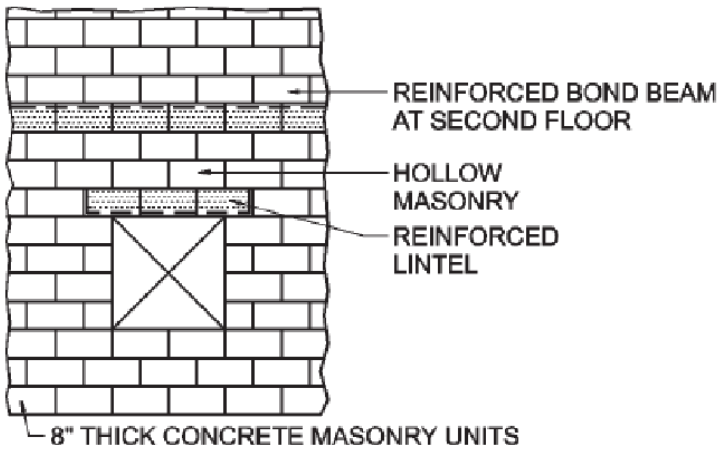
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TABLE R609.6.1.2(3)
SUPERIMPOSED LOADS
MINIMUM RATED LOAD CAPACITY OF NOMINAL 8 INCH THICK PRE-ENGINEERED ASSEMBLIES SPANNING OPENINGS OF BOTTOM STORY OF TWO-STORY BUILDINGS, SECOND AND BOTTOM STORIES OF THREE-STORY BUILDINGS—HOLLOWCORE FLOOR SYSTEM

Floor[1] Span (ft)	Minimum Rated Gravity Load of Assembly (plf)					
	Assembly Clear Span (ft)					
	4	6	8	12	16	20
42	290	340	390	490	590	690
12	670	720	770	870	970	1,070
24	1,240	1,290	1,340	1,440	1,540	1,640
36	1,810	1,860	1,910	2,010	2,110	2,210
44	2,190	2,240	2,290	2,390	2,490	2,590
52	2,570	2,620	2,670	2,770	2,870	2,970
60	2,950	3,000	3,050	3,150	3,250	3,350

NOTES:

1. For a wall supporting floors on both sides, enter Table with the sum of the 2 full spans. NOTE: Tabular values are for 1/2 the load of the full span shown.
2. Use 4 ft building width for assemblies in non-floor bearing walls (normally endwalls and interior masonry walls and shearwalls).
3. The values in this table may be interpolated.
4. These loads take into account the dead load of any masonry in the wall above the assembly and live and dead loads of the roof and floor supported. Dead load of the assembly is not included in the table and if not included in the pre-engineered concrete assembly design must be added to the loads in the table.
5. This table is applicable for all roof dead loads.



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609.6.2 Continuous Bond Beams Spanning Openings.

609.6.2.1 Under the provisions of this section, bond beams shall:

1. Be 16 inches high nominal over openings, except cast-in-place concrete bond beams which may be 12 inches high nominal.
2. Have top reinforcement continuous over the wall and opening.
3. Have bottom reinforcement extending past each side of the opening a minimum of 24 inches for concrete walls and 4 inches for masonry walls.
4. Meet the provisions of Tables R609.6.2.1(1), R609.6.2.1 (2), and R609.6.2.1 (3) as appropriate.

609.6.2.2 Top reinforcement required over the opening which is in addition to that required over the wall shall extend past the opening a minimum of 24 inches.

609.6.2.3 When pre-engineered assemblies are utilized to form the bottom portion of the bond beam over the opening in masonry walls, the bottom reinforcement of the pre-engineered assemblies shall be counted toward the additional bottom reinforcement required over the opening.

R609.6.3 Bond beams combined with lintels.

R609.6.3.1 The provisions of this section shall apply when the lintel, the wall area between the lintel and the bond beam, and the bond beam itself are solid grouted masonry units or cast together as one unit.

R609.6.3.2 Combined bond beams/lintels shall meet the requirements of the appropriate Table 609.6.3.2(1), (2), or (3).

R609.6.3.3 Top reinforcement which is in addition to that required in the bond beam over the wall shall extend a mini-mum of 24 inches past each side of the opening. Top bond beam reinforcement shall be continuous over wall and opening.

609.6.3.4 Bottom reinforcing shall extend past each side of the opening a minimum of 24 inches for concrete walls and 4 inches for masonry walls. When using a precast lintel, the reinforcing in the precast lintel shall be included when determining the total amount of bottom reinforcement furnished.

609.6.3.5 For masonry walls, a cleanout shall be provided in the cells directly above the ends of the lintel when the reinforcing steel in the bottom of the lintel is more than 22 inches below the top of the bond beam.

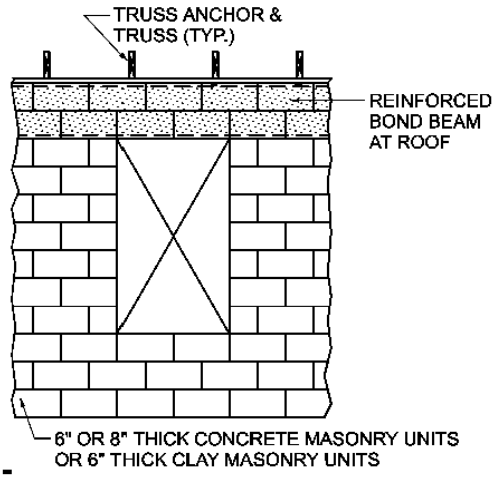
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TABLE R609.6.2.1(1)
MAXIMUM CLEAR SPAN CAPACITY OF CONTINUOUS BOND BEAMS ACTING AS LINTELS ONE STORY AND TOP STORY OF MULTI-STORY BUILDINGS

Roof Span (ft)	Maximum Allowable Clear Span (ft-in)[5]											
	Bond Beam 6" Thick Wall[1,2,4]						Bond Beam 8" Thick Wall[1,2,4]					
	16-1	16-2	C12-1	C12-2	C16-1	C16-2	16-1	16-2	C12-1	C12-2	C16-1	C16-2
43	16-0	17-4	16-0	20-8	18-0	24-8	16-0	18-8	15-4	20-8	17-4	23-4
12	12-0	13-4	12-0	15-4	14-0	18-8	12-8	14-0	11-4	16-0	13-4	18-0
24	8-8	8-8	9-4	10-8	10-8	14-8	10-0	11-4	8-8	12-8	10-8	14-8
36	6-8	6-8	8-0	8-0	9-4	11-4	8-8	8-8	7-4	10-0	8-8	12-0
44	6-0	6-0	7-4	7-4	8-0	10-0	7-4	7-4	6-8	8-8	8-0	11-4
52	5-4	5-4	6-0	6-0	8-0	8-8	6-8	6-8	6-8	8-0	7-4	10-8
60	4-8	4-8	6-0	6-0	7-4	8-0	6-0	6-0	6-0	7-4	7-4	10-0

NOTES:

1) Designation of bond beam types over openings:
   a) Letter C designates a concrete bond beam. All other bond beams are masonry.
   b) The first number denotes the nominal height of the bond beam in inches.
   c) The second number denotes the number of No.5 reinforcing bars in the top and the bottom of the beam. A single (1) No.7 bar may be used in lieu of 2 No.5 bars. The bottom reinforcing steel shall be located no more than 2 3/4 inches clear distance from the bottom of masonry bond beams and 1 1/2 inches for concrete bond beams.
2) All bond beams have reinforcement in the top as required by Tables R609.2.2A-1 through 609.2.2A-4 and Tables R609.2.2B-1 throughR609.2.2B-8 as appropriate. If 2 No.5 are required in this table and only 1 No.5 is required by Table R609.2.2A-1 through R609.2.2A-4 and Tables R609.2.2B-1 through R609.2.2B-8 as appropriate, the additional bar shall be placed in the top of the bond beam over the opening and shall extend past the opening a minimum of 24 inches.
3) Use 4 foot roof span for lintels in endwalls.
4) The bottom reinforcement in precast lintels may be used to satisfy the continuous bond beam bottom reinforcement requirement.
5) For roof dead loads more than 10 psf:
   a. For 20 psf roof dead load, multiply allowable clear spans by 0.85.
   b. For 30 psf roof dead load, multiply allowable clear spans by 0.75.
   c. Values for other roof dead loads may be interpolated.



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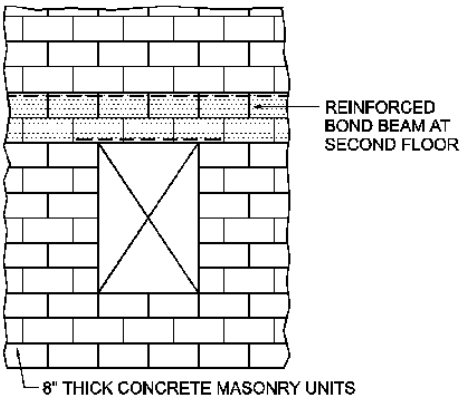
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TABLE R609.6.2.1.(2)
MAXIMUM CLEAR SPAN CAPACITY OF CONTINUOUS BOND BEAMS ACTING AS LINTELS BOTTOM STORY OF TWO-STORY BUILDINGS, SECOND AND BOTTOM STORIES OF THREE-STORY BUILDINGS—WOOD FLOOR SYSTEM

Building Width (ft)	Bond Beam 8" Thick Wall[1,2,4]						
	16-1	16-2	C1-1	C12-2	C16-1	C16-2	C16-3
	Maximum Allowable Clear Span (ft-in)[5]						
4[3]	11-4	13-4	10-8	14-0	12-0	15-4	18-0
12	10-0	11-4	9-4	12-0	10-8	14-0	16-0
24	8-8	8-8	8-0	10-0	8-8	12-0	12-8
36	6-8	6-8	6-8	8-0	8-0	10-8	10-8
44	6-0	6-0	6-0	7-4	7-4	9-4	9-4
52	5-4	5-4	6-0	6-8	6-8	8-8	8-8
60	4-8	4-8	5-4	6-0	6-8	8-0	8-0

NOTES:

1. Designation of bond beam over openings:
   a. Letter C designates a concrete bond beam. All other bond beams are masonry.
   b. The first number denotes the nominal height of the bond beam in inches.
   c. The second number denotes the number of No.5 reinforcing bars in the top and the bottom of the beam. 1 No.7 may be used in lieu of 2 No.5. The bottom rein-forcing steel shall be located no more than 2 3/4 inches clear distance from the bottom of masonry bond beams and 1 1/2 inches for concrete bond beams.
2. All bond beams shall have reinforcement in the top in accordance with Section R609.6.2.
3. Use 4 foot floor span for lintels in walls parallel to hollowcore.
4. The bottom reinforcement in precast lintels may be used to satisfy the continuous bond beam bottom reinforcement requirement.
5. This table is applicable for all roof dead loads.



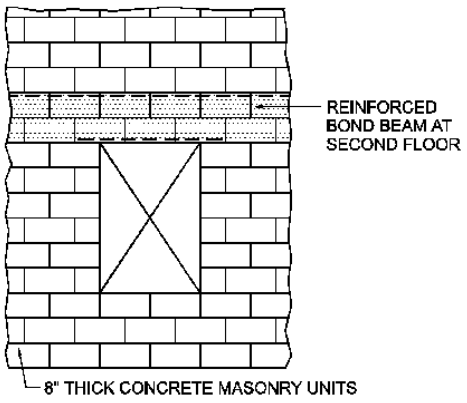
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TABLE R609.6.2.1(3)
MAXIMUM CLEAR SPAN CAPACITY OF
CONTINUOUS BOND BEAMS ACTING AS LINTELS
BOTTOM STORY OF TWO-STORY BUILDINGS, SECOND AND BOTTOM STORIES OF
THREE-STORY BUILDINGS—HOLLOWCORE SECOND FLOOR

Building Width (ft)	Bond Beam 8" Thick Wall1,2,4						
	16-1	16-2	C12-1	C12-2	C16-1	C16-2	C16-3
	Maximum Allowable Clear Span (ft-in)5						
4[3]	10-8	12-0	10-0	13-4	11-4	14-8	17-4
12	8-8	9-4	8-0	10-8	9-4	12-0	13-4
24	6-0	6-0	6-0	7-4	7-4	10-0	10-0
36	4-8	4-8	5-4	6-0	6-0	8-0	8-0
44	4-0	4-0	4-8	5-4	6-0	7-4	7-4
52	4-0	4-0	4-8	4-8	5-4	6-8	6-8
60	3-4	3-4	4-0	4-0	5-4	6-0	6-0

NOTES:

1. Designation of bond beam over openings:
   d. Letter C designates a concrete bond beam. All other bond beams are masonry.
   e. The first number denotes the nominal height of the bond beam in inches.
   f. The second number denotes the number of No.5 reinforcing bars in the top and the bottom of the beam. 1 No.7 may be used in lieu of 2 No.5. The bottom rein-forcing steel shall be located no more than 2 3/4 inches clear distance from the bottom of masonry bond beams and 1 1/2 inches for concrete bond beams.
2. All bond beams shall have reinforcement in the top in accordance with Section R609.6.2.
3. Use 4 foot floor span for lintels in walls parallel to hollowcore.
4. The bottom reinforcement in precast lintels may be used to satisfy the continuous bond beam bottom rein-forcement requirement.
5. This table is applicable for all roof dead loads.



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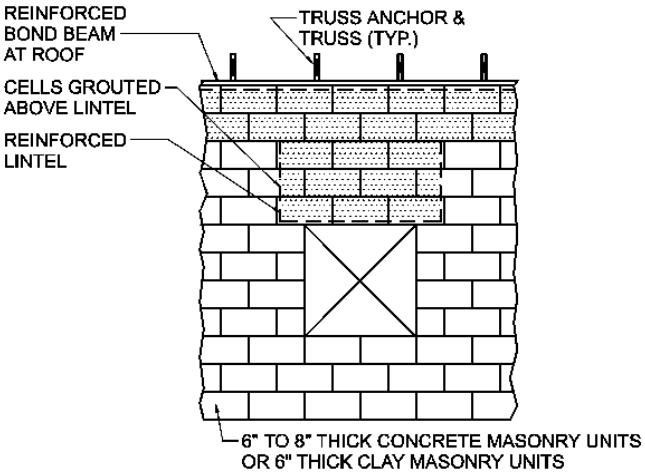
TABLE R609.6.3.2(1)
COMBINED BOND BEAM/LINTELS
ONE STORY AND TOP STORY OF MULTI-STORY BUILDINGS

Bond Beam Height	Roof Span (ft)	Maximum Allowable Clear Span (ft-in)[5]															
		Combined Bond Beam/Lintel 8" Thick Wall[1,2,]															
		12-1	12-2	16-1	16-2	24-1	24-2	24-3	32-2	32-3	32-4	40-2	40-3	40-4	48-3	48-4	48-5
6"	4[3]	11-4	12-0	14-8	16-0	18-8	22-8	23-4	27-4	29-4	30-0	29-4	34-0	35-4	38-0	39-4	40-8
	12	8-0	8-8	11-4	12-0	14-8	17-4	17-4	18-8	22-9	23-3	24-8	24-8	28-9	29-4	31-4	33-4
	24	6-0	6-9	8-8	8-8	11-4	14-0	14-0	18-0	18-0	18-0	20-0	22-0	20-0	26-0	26-0	26-0
	36	4-8	4-8	6-8	6-8	10-0	10-8	10-8	14-0	14-0	14-0	17-4	17-4	17-4	20-8	20-8	20-8
	44	4-0	4-0	6-0	6-0	9-4	9-4	9-4	12-8	12-8	12-8	15-4	15-4	15-4	18-0	18-0	18-0
	52	3-4	3-4	5-4	5-4	8-0	8-0	8-0	11-4	11-4	11-4	14-0	14-0	14-0	16-8	16-8	16-8
	60	3-4	3-4	4-8	4-8	7-4	7-4	7-4	10-0	10-0	10-0	12-8	12-8	12-8	15-4	15-4	15-4
8"	4[3]	12-0	12-8	14-8	16-8	17-4	23-4	24-8	25-4	30-0	30-8	26-8	32-8	35-4	34-0	39-4	40-8
	12	8-8	9-4	11-4	13-4	14-0	18-8	20-8	21-4	24-8	26-0	22-8	28-0	30-0	29-4	34-0	35-4
	24	6-8	7-4	9-4	10-0	11-4	15-4	16-0	17-4	20-8	21-4	19-4	23-4	25-4	25-4	28-8	30-0
	36	6-0	6-0	8-0	8-8	9-4	13-4	13-4	15-4	17-4	17-4	16-8	20-8	21-4	22-0	24-8	24-8
	44	5-4	5-4	7-4	7-4	8-8	11-4	11-4	14-0	15-4	15-4	16-0	18-8	18-8	20-8	22-0	22-0
	52	4-8	4-8	6-8	6-8	8-0	10-0	10-0	13-4	14-0	14-0	14-8	17-4	17-4	19-4	20-0	20-0
	60	4-0	4-0	6-0	6-0	8-0	9-4	9-4	12-8	12-8	12-8	14-0	15-4	15-4	18-8	18-8	18-8

NOTES:

1. Designation of combined bond beam/lintels:
   a. The first number denotes the nominal height of the bond beam/lintel in inches.
   b. The second number denotes the number of No.5 reinforcing bars in the bottom of the bond beam/lintel. The equivalent or greater area of reinforcement may be obtained by using reinforcement other than No.5. For example, when 3 No.5 are required 1 No.9 may be used. Also, 1 No.7 may be used to replace 2 No.5 or 2 No.7 to replace 4 No.5. The bottom reinforcing steel is to be located not more than 2 3/4 inches clear distance from the bottom of the lintel.
2. All bond beams shall have reinforcement in the top in accordance with R609.2.2A-1 through R609.2.2A-4 and Tables R609.8.2B-1 throughR609.8.2B-8, as appropriate.

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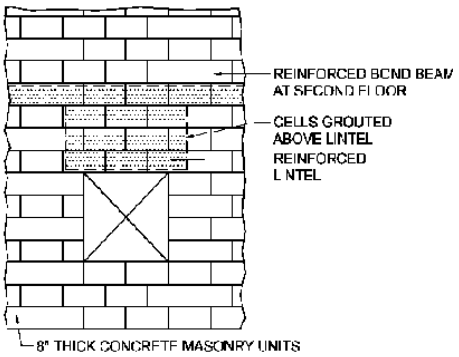
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TABLE R609.3.2.2(2)
COMBINED BOND BEAM/LINTELS
BOTTOM STORY OF TWO-STORY BUILDINGS, SECOND AND BOTTOM STORIES OF THREE STORY BUILDINGS - WOOD FLOOR SYSTEM

Floor Span Supported (ft)	Combined Bond Beam/Lintel 8" Thick Wall[1,2,]									
	12-2	16-2	24-2	24-3	32-2	32-3	40-3	40-4	48-3	48-4
	Maximum Allowable Clear Span (ft-in)[5]									
4[3]	9-4	12-0	16-0	16-8	18-0	20-0	22-8	24-0	24-0	26-8
12	8-0	10-8	14-0	15-4	16-0	18-8	20-8	22-0	22-0	24-0
24	6-0	8-8	12-0	12-0	14-0	15-4	18-0	18-0	20-0	20-8
36	4-8	6-8	10-0	10-0	12-8	13-4	16-0	16-0	18-0	18-0
44	4-0	6-0	9-4	9-4	12-0	12-0	14-8	14-8	16-8	16-8
52	4-0	5-4	8-8	8-8	10-8	10-8	13-4	13-4	16-0	16-0
60	3-4	4-8	8-0	8-0	10-0	10-0	12-8	12-8	14-8	14-8

Notes:

1. Designation of combined bond beam/lintels:
   a. The first number denotes the nominal height of the bond beam/lintel in inches.
   b. The second number denotes the number of No.5 reinforcing bars in the bottom of the bond beam/lintel. The equivalent or greater area of reinforcement may be obtained by using reinforcement other than No.5 bars. For example, when 3 No.5 are required, 1 No.9 may be used. Also, 1 No.7 may be used to replace 2 No.5 or 2 No.7 may be used to replace 4 No.5. The bottom reinforcing steel is to be located not more than 2 3/4 inches clear distance from the bottom of the lintel.
2. All bond beams shall have reinforcement in the top in accordance with Section 609.6.2.
3. Use 4 foot floor span for walls parallel to hollowcore (nonloadbearing).
4. All The bottom reinforcement in precast lintels may be used to satisfy the continuous bond beam bottom reinforcement requirement.
5. This table is applicable for all roof dead loads.



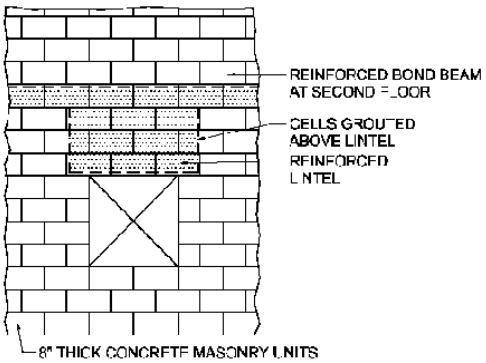
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TABLE R609.6.3.2(3)
COMBINED BOND BEAM/LINTELS
BOTTOM STORY OF TWO-STORY BUILDINGS , SECOND AND BOTTOM STORIES OF THREE-STORY BUILDINGS - HOLLOWCORE FLOOR SYSTEM

Floor Span Supported (ft)	Combined Bond Beam/Lintel 8" Thick Wall[1,2,]									
	12-2	16-2	24-2	24-3	32-2	32-3	40-3	40-4	48-3	48-4
	Maximum Allowable Clear Span (ft-in)[5]									
4[3]	8-8	11-4	15-4	16-0	17-4	19-4	22-0	23-4	23-4	25-4
12	6-8	9-4	12-8	12-8	14-8	16-0	18-8	18-8	20-8	21-4
24	4-8	6-0	9-4	9-4	12-0	12-0	14-8	14-8	17-4	17-4
36	3-4	4-8	7-4	7-4	10-0	10-0	12-0	12-0	14-8	14-8
44	2-8	4-0	6-8	6-8	8-8	8-8	11-4	11-4	13-4	13-4
52	2-8	4-0	6-0	6-0	8-0	8-0	10-0	10-0	12-0	12-0
60	2-8	3-4	5-4	5-4	7-4	7-4	9-4	9-4	11-4	11-4

Notes:

1) Designation of combined bond beam/lintels:
   a) The first number denotes the nominal height of the bond beam/lintel in inches.
   b) The second number denotes the number of No.5 reinforcing bars in the bottom of the bond beam/lintel. The equivalent or greater area of reinforcement may be obtained by using reinforcement other than No.5 bars. For example, when 3 No.5 are required, 1 No.9 may be used. Also, 1 No.7 may be used to replace 2 No.5 or 2 No.7 may be used to replace 4 No.5. The bottom reinforcing steel is to be located not more than 2 3/4 inches clear distance from the bottom of the lintel.
2. All bond beams shall have reinforcement in the top in accordance with Section 609.6.2.
3. Use 4 foot floor span for walls parallel to hollowcore (non-loadbearing).
4. All The bottom reinforcement in precast lintels may be used to satisfy the continuous bond beam bottom reinforcement requirement.
5. This table is applicable for all roof dead loads.



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SECTION R614
COMBNED CONCRETE, MASONRY, OR ICF AND
WOOD EXTERIOR WALL CONSTRUCTION

R614.1 General. This section prescribes construction requirements for individual building elements where one or more exterior walls above the foundation contain multiple construction types. Where specific construction requirements are not specifically prescribed in this section, the requirements in the applicable sections of each material shall govern.

R614.2 Concrete, masonry, or ICF first story wood frame second and third story.

RI614.2.1 Foundation. The foundation system shall be designed in accordance with Chapter 4.

R61,4.2.2 First-story construction. The concrete, masonry or ICF first-story shall be in accordance with Chapter 6 for the applicable first-story construction method.

R614.2.3 Floor systems. The second- and third-story floor system shall be in accordance with Chapter 5.

R614.2.4 Second- and third-story construction. The second-and third-story walls, ceilings and roof shall be in accordance with the appropriate sections in Chapters 6, 8, and 9.

R614.2.5 Shear wall connections. Second-story shearwalls shall be connected to first-story walls in accordance with Tables 3.2A, 3.2B, 3.2C, A-3.24, 4 3.28 or A-3.2C of the AF&PA Wood Frame Construction Manual for One- and Two-Family Dwellings as applicable.

R614.3 Wood frame gable endwalls above concrete, masonry, or ICF walls. This condition is not permitted unless there is a ceiling diaphragm in accordance with Figures 3.7a and 3.15 of the AF&PA Wood Frame Construction Manual for One- and Two-Family Dwellings.

R614.3.1 Gable construction. Gable construction shall be in accordance with the AF&PA Wood Frame Construction Manual for One- and Two-Family Dwellings.

R614.3.2 Wall construction. Concrete, masonry or ICF wall construction shall be in accordance with Chapter 6.

R614.3.3 Gable connection. The connection of the wood frame gable endwall to the concrete, masonry or ICF wall shall be in accordance with Figures R614.3(1) and R614.3(2), or Figure R609.4.

Fiscal Impact Statement [Provide documentation of the costs and benefits of the proposed modifications to the code for each of the following entities. Cost data should be accompanied by a list of assumptions and supporting documentation. Explain expected benefits.]:

A. Impact to local entity relative to enforcement of code: No impact on cost to enforce. Provisions have been in code for years.

B. Impact to building and property owners relative to cost of compliance with code: The proposed changes do not have a fiscal impact on property owners unless to reduce the costs of construction by providing clear and concise prescriptive means for code compliance.

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C. Impact to industry relative to cost of compliance with code: The proposed changes do not have a fiscal impact on the construction industry unless to reduce the costs of plan review and inspection by providing clear and concise prescriptive means for code compliance.

D Impact to small business: The proposed changes do not have a fiscal impact on the construction industry unless to reduce the costs of plan review and inspection by providing clear and concise prescriptive means for code compliance.

Rationale [Provide an explanation of why you would like this Proposed Modification to the Florida Building Code.]: The code as adopted does not contain prescriptive structural provisions which may be used in the State of Florida. The proposed modifications provide prescriptive provisions for the construction of masonry structures for the various basic wind speeds and exposure categories prevalent in the state. The provisions are based on the latest edition of nationally recognized standards.

Please explain how the proposed modification meets the following requirements:

1. Has a reasonable and substantial connection with the health, safety, and welfare of the general public: The proposal has a reasonable and substantial connection with the health, safety, and welfare of the general public by providing prescriptive methods of complying with the code provisions regarding wind resistance of residential structures.

2. Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction: The proposal strengthens and improves the code by providing prescriptive construction methods for the construction of wind resistant residential structures within the State for Florida.

3. Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities: The proposal addresses sections of the code related to masonry construction and does not discriminate against materials, products, methods or systems of construction.

4. Does not degrade the effectiveness of the code: The proposal increases the effectiveness of the code by providing prescriptive methods for building wind resistant masonry dwellings in the State of Florida.

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The geography of Florida places the state in wind speed zones not addressed by the International Residential Code (IRC). The IRC is intended to be a prescriptive code for residential construction. It contains no prescriptive provisions suitable for the wind speeds assigned to Florida. This modification is one of a series of changes intended to provide the prescriptive provisions to construct wind resistant concrete masonry residential structures and make the code useable for building such structures\.

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S6017 Prior Code Version question. submitted or attempted to be included

Page: 1

These provisions have been submitted to the International Residential Code Committee on two different occasions; once by myself on behalf of Florida's concrete industry and once by BOAF. They were rejected both times. The reason given by the maker of the motion to disapprove, a home builder from Louisiana were words to the effect that this was a local issue and did not belong in the code. A lot of work goes into preparing these code changes and to have them rejected out of hand for no good reason is not conducive to putting in the effort at the national level.

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S5701

Date Submitted	7/27/2012	**Section**	R612.2	**Proponent**	T Stafford
Chapter	6	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Correlation with ASCE 7-10.

Rationale

This proposal part of a series of proposals that reinstate the ultimate wind speed maps in the FBCR. The proposal is a correlation with the main proposal updating the maps.

This language is currently contained in the 2010 FBCR. No new requirements are being proposed. This proposal simply clarifies that the design pressures determined from ASCE 7 can be multiplied by 0.6 for testing protocols that are based on allowable or nominal wind loads. The wind speeds in ASCE 7-10 are strength-design level loads. Some reference standards, such as the ones in this section, are based on test criteria that assumes the wind loads are nominal or allowable wind loads. The language provides the correlation between these reference standards and the strength design-level loads of ASCE 7-10.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to building and property owners relative to cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5701 Text Modification

R612.2 Performance. Exterior windows and doors shall be designed to resist the design wind loads specified in Table R301.2(2) adjusted for height and exposure per Table R301.2(3). For testing required in Sections R612.3 and R612.5, design pressures determined from Table R301.2(2) or ASCE 7 are permitted to be multiplied by 0.6.

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Date Submitted	7/19/2012	**Section**	R612.3, R202	**Proponent**	Joseph Hetzel
Chapter	6	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Inclusion of garage door labeling requirements.

Rationale

Carries over the garage door labeling requirements from the 2010 Code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Continues improved efficiency in enforcing the code.

Impact to building and property owners relative to cost of compliance with code

No adverse impact.

Impact to industry relative to the cost of compliance with code

No adverse impact.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Contributes to public health, safety and welfare by clarifying garage door labeling requirements.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Preserves improvement of the code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

Revise Section R612.3 as follows:

R612.3 Testing and labeling.

Exterior windows and sliding doors shall be tested by an approved independent laboratory, and bear a label identifying manufacturer, performance characteristics and approved inspection agency to indicate compliance with AAMA/WDMA/CSA 101/I.S.2/A440. Exterior side-hinged doors shall be tested and labeled as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 or comply with Section R612.5.

Exception: Decorative glazed openings.

R612.3.1 Garage door labeling. Garage doors shall be labeled with a permanent label provided by the garage door manufacturer. The label shall identify the garage door manufacturer, the garage door model/series number, the positive and negative design pressure rating, indicate impact rated if applicable, the installation instruction drawing reference number, the Florida Product Approval or Miami-Dade Product Approval number if applicable, and the applicable test standards. The required garage door components for an approved garage door assembly may be indicated using a checklist form on the label. If a checklist format is used on the label, the door installer or the garage door manufacturer shall mark the selected components on the checklist that are required to assemble an approved garage door system. The installation instructions shall be provided and available on the job site.

Add the following definition to Section R202:

GARAGE DOOR MANUFACTURER: The party responsible for the completed assembly of the garage door components.

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S5670

Date Submitted	7/26/2012	**Section**	R612.3.1	**Proponent**	Dwight Wilkes
Chapter	6	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

To reinstate the exterior windows and doors structural performance, testing, standards, label requirements and comparative analysis with Proposed changes to the 2012 IRC as submitted under S173-12 and Public Comment to S172.

Rationale

Rationale: Reason: The current exception limits the use of comparative analysis to window units smaller than the size originally tested for
labeling purposes. If comparative analysis is used to provide a higher design pressure rating of the smaller unit, its resistance to air infiltration and water penetration at the correspondingly higher design pressure required by AAMA/WDMA/CSA 101/I.S.2/A440 must be verified by testing of the unit. These characteristics cannot be determined by calculation.
Comparative analysis is also appropriate to rate window units larger than the size originally tested for labeling purposes to lower design pressures. In this scenario, the corresponding design pressure used to verify resistance to air infiltration and water penetration would also be lower. Testing would not be required to verify this level of performance since a higher level has already been determined by testing of the same components in a smaller window unit.
This proposal revises this section as appropriate to permit the use of comparative analysis for larger as well as smaller window units than those tested for labeling.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to building and property owners relative to cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Helps protect the health and welfare of the public by having products tested and labeled to these standards.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This will improve the code by reinstating these standards that exist in the Florida Code with the current edition.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification does not discriminate as it allows the use of any product that shows proof of meeting the code established standards.

Does not degrade the effectiveness of the code

Does not degrade the code as these standards are in the 2010 Florida Residential Code, the 2012 IRC base code edition with the current proposals.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

There are similarities between the 2012 IRC base code and the 2010 Florida Residential Code, as they both have provisions for Comparative analysis; this modification is intended to bring the Florida comparative analysis and to further clarify its use based on submitted proposals to the International base codes.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

OTHER

Explanation of Choice

The use of and application for comparative analysis exist in the 2010 Florida Residential Code and has demonstrated by use that these provisions need to remain.

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

R612.3 Testing and labeling.
Exterior windows and sliding doors shall be tested by an *approved* independent laboratory, and bear a *label* identifying manufacturer, performance characteristics and *approved* inspection agency to indicate compliance with AAMA/WDMA/CSA 101/I.S.2/A440. Exterior side-hinged doors shall be tested and *labeled* as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 or comply with Section R612.5.

Exception: Decorative glazed openings.

R612.3.1 Comparative analysis.

Structural wind load design pressures for window and door units ~~smaller~~ other than the size tested in accordance with Section R612.3 shall be permitted to be ~~higher~~ different than the design value of the tested unit provided such ~~higher~~ different pressures are determined by accepted engineering analysis or validated by an additional test of the window or door unit to the different design pressure in accordance with section R612.3. All components of the ~~small~~ alternative size unit shall be the same as the tested or labeled unit. ~~Where such calculated design pressures are used, they shall be validated by an additional test of the window unit having the highest allowable design pressure.~~

Exceptions:

i Operable windows and doors rated in this manner shall comply with the following:

1. The frame area of the alternate size unit shall not exceed the frame area of the tested approved unit.

2. Shall vary from the tested approved unit only in width, height or load requirements.

3. Shall not exceed 100 percent of the proportional deflection for fiber stress of the intermediate members of the approved unit.

4. Shall not exceed 100 percent of the concentrated load at the juncture of the intermediate members and the frame of the approved unit.

5. Shall not exceed the air and water infiltration resistance of the tested approved unit.

6. Shall not exceed the maximum cyclic pressure of the tested approved unit when tested per TAS 203 or ASTM E 1886 and ASTM E 1996 where applicable.

ii. Non-operable windows and doors rated in this manner shall comply with the following:

1. The frame area of the alternate size unit shall not exceed the frame area of the tested approved unit.

2. Shall vary from the tested approved unit only in width, height or load requirements.

3. The maximum uniform load distribution (ULD) of any side shall be equal to the uniform load carried by the side divided by the length of the side.

4. The ULD of any member shall not exceed the ULD of the corresponding member of the tested approved unit.

5. The ULD of each member shall be calculated in accordance with standard engineering analysis.

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6. Shall not exceed the air and water infiltration resistance of the tested approved unit.

7. Shall not exceed the maximum cyclic pressure of the tested approved unit when tested per TAS 203 or ASTM E 1886 and ASTM E 1996 where applicable.

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R612.3 Testing and labeling.

Exterior windows and sliding doors shall be tested by an *approved* independent laboratory, and bear a *label* identifying manufacturer, performance characteristics and *approved* inspection agency to indicate compliance with AAMA/WDMA/CSA 101/I.S.2/A440. Exterior side-hinged doors shall be tested and *labeled* as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 or comply with Section R612.5.

Exception: Decorative glazed openings.

R612.3.1 Comparative analysis.

Structural wind load design pressures for window and door units ~~smaller~~ other than the size tested in accordance with Section R612.3 shall be permitted to be ~~higher~~ different than the design value of the tested unit provided such ~~higher~~ different pressures are determined by accepted engineering analysis or validated by an additional test of the window or door unit to the different design pressure in accordance with section R612.3. All components of the ~~small~~ alternative size unit shall be the same as the tested or labeled unit. ~~Where such calculated design pressures are used, they shall be validated by an additional test of the window unit having the highest allowable design pressure.~~

Exceptions:

i Operable windows and doors rated in this manner shall comply with the following:

1. The frame area of the alternate size unit shall not exceed the frame area of the tested approved unit.

2. Shall vary from the tested approved unit only in width, height or load requirements.

3. Shall not exceed 100 percent of the proportional deflection for fiber stress of the intermediate members of the approved unit.

4. Shall not exceed 100 percent of the concentrated load at the juncture of the intermediate members and the frame of the approved unit.

5. Shall not exceed the air and water infiltration resistance of the tested approved unit.

6. Shall not exceed the maximum cyclic pressure of the tested approved unit when tested per TAS 203 or ASTM E 1886 and ASTM E 1996 where applicable.

ii. Non-operable windows and doors rated in this manner shall comply with the following:

1. The frame area of the alternate size unit shall not exceed the frame area of the tested approved unit.

2. Shall vary from the tested approved unit only in width, height or load requirements.

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http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5670_Text_R612.3 R 612.3.1 Comparative analysis - IBC-IRC-S173-12 and Public

S5670 Prior Code Version question. submitted or attempted to be included

S172–12

1710.5

Proponent: Julie Ruth, P.E. JRuth Code Consulting, representing American Architectural Manufacturers Association (AAMA) (julruth@aol.com)

Revise as follows:

1710.5 Exterior window and door assemblies. The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1710.5.1 or 1710.5.2.

Exception: Structural wind load design pressures for window units ~~smaller~~ other than the size tested in accordance with Section 1710.5.1 or 1710.5.2 shall be permitted to be ~~higher~~ different than the design value of the tested unit provided such ~~higher~~ pressures are determined by accepted engineering analysis orvalidatedbyanadditionaltestofthewindowunittothealternateallowable design pressureinaccordancewithSection1710.5.2. All components of the ~~small~~ alternatesize unit shall be the same as the tested orlabeled unit. Where ~~suchcalculateddesignpressuresare~~ engineeringanalysisis used, ~~theyshallbevalidatedbyanadditionaltestofthewindowunithaving thehighestallowabledesign pressure~~ theglassshallcomplywithSection2403.

Reason: The current exception limits the use of comparative analysis to window units smaller than the size originally tested for labeling purposes. If comparative analysis is used to provide a higher design pressure rating of the smaller unit, its resistance to air infiltration and water penetration at the correspondingly higher design pressure required by AAMA/WDMA/CSA 101/I.S.2/A440 must be verified by testing of the unit. These characteristics cannot be determined by calculation.

Comparative analysis is also appropriate to rate window units larger than the size originally tested for labeling purposes to lower design pressures. In this scenario, the corresponding design pressure used to verify resistance to air infiltration and water penetration would also be lower. Testing would not be required to verify this level of performance since a higher level has already been determined by testing of the same components in a smaller window unit.

This proposal revises this section as appropriate to permit the use of comparative analysis for larger as well as smaller window units than those tested for labeling. The last sentence of the section is also revised to specify that when engineering analysis is used, the glass in the fenestration product must also comply with Section 2403. Section 2403 establishes specific criteria for the deflection of the framing supporting the glass.

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Date Submitted	7/19/2012	**Section**	R612.4	**Proponent**	Joseph Hetzel
Chapter	6	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Inclusion of garage door test requirements.

Rationale

Carries over the clarification of garage door test pressure language from the 2010 Code. Language proposed is for consistency with similar proposed language for the Building volume.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Continues improved efficiency in enforcing the code.

Impact to building and property owners relative to cost of compliance with code

No adverse impact.

Impact to industry relative to the cost of compliance with code

No adverse impact.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Contributes to public health, safety and welfare by clarifying garage door test requirements.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Preserves improvement of the code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No adverse impact.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

Revise R612.4 as follows:

R612.4 Garage doors.

~~Garage doors shall be tested in accordance with either ASTM E 330 or ANSI/ DASMA 108, and shall meet the acceptance criteria of ANSI/DASMA 108.~~ Garage doors shall be tested for determination of structural performance under uniform static air pressure difference in accordance with ANSI/DASMA 108, ASTM E330 Procedure A, or TAS 202. For garage doors tested in accordance with ASTM E330, acceptance criteria shall be in accordance with ANSI/DASMA 108. (HVHZ shall comply with TAS 202.) Design pressures shall be determined from Table R301.2(4) or ASCE 7. The design pressures, as determined from ASCE 7, are permitted to be multiplied by 0.6.

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Date Submitted	7/25/2012	**Section**	R612.6	**Proponent**	Janet Gerard
Chapter	6	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

R612.6

Summary of Modification

Provides clarification of the term product approval

Rationale

Provides clarification for a term used in diferent contexts. Section 612.6 uses Approval number and Product Approval with no definition. This change proposal clarifies the term.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. Currently product approval is required, this change only offers clarification

Impact to building and property owners relative to cost of compliance with code

None. Currently product approval is required, this change only offers clarification

Impact to industry relative to the cost of compliance with code

None. Currently product approval is required, this change only offers clarification

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Currently product approval is required, this change only offers clarification

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Currently product approval is required, this change only offers clarification

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No. Currently product approval is required, this change only offers clarification

Does not degrade the effectiveness of the code

No. Currently product approval is required, this change only offers clarification

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5657-G1

Proponent BOAF CDC **Submitted** 9/15/2012 **Attachments** No

Comment:

This code change is unnecessary as the provisions contained in the proposed amendment are adequately addressed in the applicable international code. Per FS 553.73 (7) (g)

The amendment does not demonstrate by evidence or data that the geographical jurisdiction of Florida exhibits a need to strengthen the foundation code beyond the needs or regional variations addressed by the foundation code. Per FS 553.73 (7) (g)

The proposed amendment does not appear to have been submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process.

R612.6 Testing and labeling. Exterior windows and glass doors shall be tested by an approved independent testing laboratory, and shall be labeled to indicate compliance with the requirements of one of the following specifications:

ANSI/AAMA/NWWDA 101/I.S.2 or ANSI/AAMA/WDMA 101/I.S.2/NAFS or AAMA/WDMA/CSA 101/I.S.2/A440 or TAS 202 (HVHZ shall comply with TAS 202 utilizing ASTM E 1300-98 or ASTM E1300-04 02). Exterior windows and sliding glass doors shall be labeled with a permanent label, marking, or etching providing traceability to the manufacturer and the product. The following shall also be required either on a permanent label or on a temporary supplemental label applied by the manufacturer: information identifying the manufacturer, the product model/series number, positive and negative design pressure rating, product maximum size, glazing thickness, impact resistance. Product ~~A~~approval number, applicable test standard(s), and approved product certification agency, testing laboratory, evaluation entity or Miami-Dade ~~P~~product ~~A~~approval.

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Date Submitted	7/28/2012	**Section**	R612.8.4.1	**Proponent**	Joseph Belcher
Chapter	6	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Retains provisions for interchangeability of door components and adopted ANSI Standard for side-hinged exterior steel doors.

Rationale

Carries forward a provision permitting the substitution of door components provided substituted parts are tested and approved for equivalent loads. This was originally placed in the code to allow builders some flexibility. Carries forward adoption of an ANSI Standard for testing exterior side-hinged doors.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact on cost. No new provisions being established. The provisions are field tested and proven to be beneficial.

Impact to building and property owners relative to cost of compliance with code

No impact on cost. No new provisions being established. The provisions are field tested and proven to be beneficial.

Impact to industry relative to the cost of compliance with code

No impact on cost. No new provisions being established. The provisions are field tested and proven to be beneficial.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

The provision carries forward provisions for door hardware substitution with equivalent parts and the adoption of and ANSI Standard from previous editions. They are field tested and proven to be effective. Public Safety is enhanced by providing an alternate standard for testing exterior doors.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

The proposal strengthens the code by allowing the continued use equivalent substitute parts and of a previously adopted ANSI Standard. The provisions are carried over from previous editions and are field tested and proven to be effective.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

The proposed amendment does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The proposal improves the effectiveness of the code by establishing that substituted components must be tested and approved and capable of resisting the loads. The provisions are carried over from previous editions and are field tested and proven to be effective.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R612.8.4
Door components evaluated by an approved product evaluation entity, certification agency, testing laboratory or engineer may be interchangeable in exterior door assemblies provided that the door component(s) provide equal or greater structural performance as demonstrated by accepted engineering practices.

R612.8.4.1
Optional exterior door component testing. With the exception of HVHZ, exterior side-hinged door assemblies not covered by Section R612.6 shall be permitted to have the option to have the components of the assembly tested and rated for structural integrity in accordance with the following ANSI A250.13

Following the structural testing of exterior door components, there shall be no permanent deformation of any perimeter frame or panel member in excess of 0.4 percent of its span after the load is removed. After each specified loading, there shall be no glass breakage, permanent damage to fasteners, hardware parts, or any other damage that causes the door to be inoperable, as applicable.

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The State of Florida is the only of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection.

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S5722 Prior Code Version question. submitted or attempted to be included

The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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Date Submitted	7/28/2012	**Section**	R614	**Proponent**	Joseph Belcher
Chapter	6	**Affects HVHZ**	No	**Attachments**	Yes

General Comments No

Alternate Language No

Related Modifications

None

Summary of Modification

Adds labeling and installation provisions for impact-resistant coverings.

Rationale

The proposal retains existing language incorporating the work of the Garage Door-Window Labeling Work Group. The work group was appointed by the Florida Building Commission in response to problems cited by building officials in determining if the proper impact resistant coverings were provided on a job. This proposal incorporates the recommendations of the Garage Door-Window Labeling Workgroup.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Will not result in any cost because the provisions have been in effect since FBC 2007. The provisions are field tested and proven to be beneficial to property owners in making certain proper products are properly installed. The original proposal was supported by the hurricane protection industry.

Impact to building and property owners relative to cost of compliance with code

Will not result in any cost because the provisions have been in effect since FBC 2007. The provisions are field tested and proven to be beneficial to property owners in making certain proper products are properly installed. The original proposal was supported by the hurricane protection industry.

Impact to industry relative to the cost of compliance with code

None - required since FBC 2007. Cost estimates are: a. Water Resistant Self-adhering Permanent Labels approximately $0.15 per label. Commonly used on Accordion, Roll, Bahama, and Colonial style shutters.

b. Embossed or ink jet labels used on metal and plastic panels approximately $0.05 per label.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Improves public health, a safety, and welfare by requiring data permitting inspection personnel and the general public to ascertain the proper product is provided and installed in accordance with its product approval.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Strengthens and improves the code by requiring data to assist inspection of products. The provisions are carried over from previous editions and are field tested and proven to be effective.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

The provisions are carried over from previous editions and are field tested and proven to be effective and do not discriminate.

Does not degrade the effectiveness of the code

The provisions are carried over from previous editions and are field tested and proven to be effective and increase the effectiveness of the code by providing the data needed to properly inspect the products.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5723 Text Modification

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SECTION R614
IMPACT-RESISTANT COVERINGS

R614.1 Impact resistant coverings shall be tested at 1.5 times the design pressure (positive or negative) expressed in pounds per square feet as determined by the Florida Building Code, Building Section 1609 for which the specimen is to be tested.
The design pressures, as determined from Section 1609 of the Florida Building Code, Building or ASCE 7, are permitted to be multiplied by 0.6.

R614.1.1
Impact resistant coverings shall be labeled in accordance with the provisions of Section R614.

R614.2. Labels.
A permanent label shall be provided by the product approval holder on all impact resistant coverings.

R614.2.1
The following information shall be included on the labels on impact resistant coverings:

1. Product approval holder name and address.

2. All applicable methods of approval. Methods of approval include, but, are not limited to Miami-Dade NOA; Florida Building Commission, TDI Product Evaluation; ICC-ES.

3. The test standard or standards specified at Section R301.2.1.2, including standards referenced within the test standards specified at Section R301.2.1.2 used to demonstrate code compliance.

4. For products with a Florida Product Approval Number or a Miami-Dade County Building and Neighborhood Compliance Department Notice of Acceptance Number (NOA), such numbers shall be included on the label.

R614.3 Location of label.
The location of the label on the impact resistant covering shall be as follows:

1. Accordions: Bottom of the locking bar or center mate facing the exterior or outside.

2. Rollup: On the bottom of the hood facing the exterior or outside or on the bottom slat facing the exterior or outside.

3. Bahama Awning or Colonial Hinged: On the bottom, placed on the back of the shutter.

4. Panels: For metal and plastic panels the label may be embossed or printed spaced not more than every three (3) lineal feet on each panel. The label shall be applied by the holder of the product approval and shall face the exterior or outside.

5. Framed products: The label shall be on the side or bottom facing the exterior or outside.

6. Labels on all other products shall face the exterior or outside.

R614.4 Installation.
All impact resistant coverings shall be installed in accordance with the manufacturer's installation instructions and in accordance with the product approval. Installation instructions shall be provided and shall be available to

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inspection personnel on the job site. Opening protection components, fasteners, and other parts evaluated by an approved product evaluation entity, certification agency, testing laboratory, architect, or engineer and approved by the holder of the product approval may be interchangeable in opening protection assemblies provided that the opening protection component(s) provide equal or greater structural performance and durability as demonstrated by testing in accordance with approved test standards.

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The State of Florida is the only of the contiguous states where the entire land mass is a hurricane prone region. Historically, Florida has endured numerous land falls from hurricanes and special attention is merited for the installation of hurricane protection.

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S5723 Prior Code Version question. submitted or attempted to be included

The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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Date Submitted	7/27/2012	**Section**	703.3.3, 703.3.4	**Proponent**	T Stafford
Chapter	7	**Affects HVHZ**	No	**Attachments**	No

General Comments No

Alternate Language No

Related Modifications

Summary of Modification

This proposal references the WFCM for attachement of wood, hardboard, and wood structural panel siding.

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

This language was originally developed by a small work group established by the Florida Building Commission, after the limit for using the prescriptive construction provisions in the IRC (and FBCR) was lowered from 110 mph to 100 mph (ASCE 7-98 wind speed maps). It became apparant that the IRC was lacking in terms of prescriptive criteria for high wind regions and clarification on the limits of the prescritpive criteria within the IRC. The group was charged with developing and/or referencing specific prescriptive criteria for high wind regions in the FBCR. The work of this group was incorporated in the 2006 Supplement to the 2004 FBCR and has been carried forward in the 2007 and 2010 FBCR as well. The group also made an effort to clearly establish the limits of the prescriptive provisions in the IRC. This is one of a series of proposals that seeks to reinstate the provisions and criteria established by this work group.

This proposal prescribes the fastening and minimum thickness requirements for wood, hardboard, and wood structural panel siding. In the 2010 FBCR, these provisions were extracted from the WFCM. Since the WFCM has been updated to be based on the strength design level maps in ASCE 7-10, a direct reference to the WFCM is recommended.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to building and property owners relative to cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R703.3.3 Attachment. Wood, hardboard and wood structural panel siding shall be attached in accordance with the AF&PA WFCM .

R703.3.4 Minimum thickness. Wood, hardboard and wood structural panel siding shall be of the minimum thickness specified in the AF&PA WFCM .

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Date Submitted	7/30/2012	**Section**	703.8	**Proponent**	Jim Heise
Chapter	7	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

This mod adds the standards from R612.12.1 that are referenced in the 2010 FBC. This is also to maintain the FMA/AAMA 100, FMA/AAMA 200, FMA/WDMA 250 in the 2013 FBC as previously in the 2010 FBC

Rationale

combines Language carried over from the 2010 Code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact to local entity as this already exisits in the 2010 FBC. Continues improved efficiency in enforcing the code.

Impact to building and property owners relative to cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Helps protect the health and welfare of the public by having products tested and labeled to these standards.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Helps protect the health and welfare of the public by having products tested and labeled to these standards.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification does not discriminate as it allows the use of any product that shows proof of meeting the code established standards.

Does not degrade the effectiveness of the code

No adverse impact.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5750-G1

Proponent Paul Malanaphy **Submitted** 8/29/2012 **Attachments** No

Comment:

Regarding the last sentence in Section 1.1, "Openings using pan flashing shall also incorporate flashing or protection at the head and sides." The phrase 'or protection' is much to broad and vague. I would recommend omitting it.

General Comment - 08/09/2012 - 09/23/2012

S5750-G2

Proponent Jim Heise **Submitted** 9/19/2012 **Attachments** No

Comment:
the standard that mentions FMA/AAMA 300 should be listed as FMA/AAMA/WDMA 300 as WDMA was one of the developers of that standard.

MODIFICATION TEXT: R703.8 Flashing.
Approved corrosion-resistant flashing shall be applied shingle-fashion in a manner to prevent entry of water into the wall cavity or penetration of water to the building structural framing components. Self-adhered membranes used as flashing shall comply with AAMA 711. All exterior fenestration products shall be sealed at the juncture with the building wall with a sealant complying with AAMA 800 or ASTM C 920 Class 25 Grade NS or greater for proper joint expansion and contraction, ASTM C 1281, AAMA 812, or other approved standard as appropriate for the type of sealant. The flashing shall extend to the surface of the exterior wall finish. Approved corrosion-resistant flashings shall be installed at all of the following locations:

1. Exterior window and door openings. Flashing at exterior window and door openings shall extend to the surface of the exterior wall finish or to the water-resistive barrier for subsequent drainage. Flashing at exterior window and door openings shall be installed in accordance with one or more of the following:

1.1. The fenestration manufacturer's installation and flashing instructions, or for applications not addressed in the fenestration manufacturer's instructions, in accordance with the flashing manufacturer's instructions. Where flashing instructions or details are not provided, pan flashing shall be installed at the sill of exterior window and door openings. Pan flashing shall be sealed or sloped in such a manner as to direct water to the surface of the exterior wall finish or to the water-resistive barrier for subsequent drainage. Openings using pan flashing shall also incorporate flashing or protection at the head and sides.

1.2. In accordance with the flashing design or method of a registered design professional.

1.3. In accordance with other approved methods.

1.4. In accordance with FMA/AAMA 100, FMA/AAMA 200, FMA/WDMA 250, or FMA/AAMA 300.

2. At the intersection of chimneys or other masonry construction with frame or stucco walls, with projecting lips on both sides under stucco copings.

3. Under and at the ends of masonry, wood or metal copings and sills.

4. Continuously above all projecting wood trim.

5. Where exterior porches, decks or stairs attach to a wall or floor assembly of wood-frame construction.

6. At wall and roof intersections.

7. At built-in gutters.

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Date Submitted	7/24/2012	**Section**	R701.1	**Proponent**	Michael Goolsby
Chapter	7	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

The provisions contained in this chapter have unique specifications for application in the HVHZ. The beginning of the chapter needs to refer the reader to Chapter 44 for the applicable HVHZ requirements.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. It provides clarity and direction in the code.

Impact to building and property owners relative to cost of compliance with code

No impact. It provides clarity and direction in the code.

Impact to industry relative to the cost of compliance with code

Cost savings by providing clarity and direction in the code.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

None. The MOD provides direction and clarity for applicable HVHZ requirements.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Strengthens the code by providing clarity and direction when working in the HVHZ.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

The modification does not discriminate against materials, products, methods or systems of construction.

Does not degrade the effectiveness of the code

This modification enhances the code by directing users to the proper chapter of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5629-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

This change is not necessary as Section R301.1 directs users to the provisions of Chapter 44 for structures located in the High Velocity Hurricane Zone.

S5629 Text Modification

R701.1 Application. The provisions of this chapter shall control the design and construction of the interior and exterior wall covering for all buildings.

Exception: Buildings and structures located within the High-Velocity Hurricane Zone shall comply with the provisions of Chapter 44.

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S5629 Prior Code Version question. Evidence or Data

Page: 1

This proposed modification reinstates guidance to applicable HVHZ sections of the code maintaining consistency with the legislative intent to preserve HVHZ wind provisions.

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Date Submitted	7/27/2012	**Section**	R703.1.3	**Proponent**	T Stafford
Chapter	7	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Clarifies the applicable loads on soffits.

Rationale

This proposal clarifies the applicable loads on soffits and wall coverings. This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to building and property owners relative to cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R703.1.3 Load resistance. All exterior walls, wall coverings and soffits shall be capable of resisting the design pressures specified in Table R301.2(2) for walls.

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Date Submitted	8/1/2012	**Section**	R703.11.2	**Proponent**	T Stafford
Chapter	7	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Clarifies the application limits of vinyl siding over foam plastic sheathing.

Rationale

This proposal combines revisions to this language in the 2010 FBCR with updates currently being considered for the IBC and ICC 600. The wind speeds applicable to these sections have been converted to Ultimate wind speeds. As agreed to recently at an ICC 600 meeting, the installation of vinyl siding over foam plastic region is limited to regions where the wind speed is less than 140 mph. Additionally, for wind speeds between 130 mph and 140 mph, the wind pressure rating is multiplied by 0.27. This factor essentially modifies the Annex of ASTM D 3679 to require a factor of safety of 2.0 and requires the vinyl siding to resist the full design wind pressure.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact relative to local entities regarding enforcement of the code.

Impact to building and property owners relative to cost of compliance with code

There will be a marginal impact to building owners relative to the cost of compliance with the code.

Impact to industry relative to the cost of compliance with code

There will be a marginal impact to industry relative to the cost of compliance with the code.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This proposal specifically addresses the proper design wind pressure ratings for vinyl siding.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This proposal strengthens the code by addressing the proper design wind pressure ratings for vinyl siding.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

This proposal does not degrade the effectiveness of the code.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R703.11.2 Foam plastic sheathing. Vinyl siding used with foam plastic sheathing shall be installed in accordance with Section R703.11.2.1; or R703.11.2.2~~, or R703.11.2.3~~.

Exception: Where the foam plastic sheathing is applied directly over wood structural panels, fiberboard, gypsum sheathing or other approved backing capable of independently resisting the design wind pressure, the vinyl siding shall be installed in accordance with Section R703.11.1.

~~**R703.11.2.1 Basic wind speed not exceeding 90 miles per hour and Exposure Category B.** Where the basic wind speed does not exceed 90 miles per hour (40 m/s), the Exposure Category is B and gypsum wall board or equivalent is installed on the side of the wall opposite the foam plastic sheathing, the minimum siding fastener penetration into wood framing shall be 1 1/4 inches (32 mm) using minimum 0.120 inch diameter nail (shank) with a minimum 0.313 inch diameter head, 16 inches on center. The foam plastic sheathing shall be minimum 1/2 inch thick (12.7 mm) (nominal) extruded polystyrene per ASTM C 578, 1/2 inch thick (12.7 mm) (nominal) polyisocyanurate per ASTM C 1289, or 1 inch thick (25 mm) (nominal) expanded polystyrene per ASTM C 578.~~

R703.11.2.1 2 Design wind pressure rating. ~~**Basic wind speed exceeding 90 miles per hour or Exposure Categories C and D.** Where the basic wind speed exceeds 90 miles per hour (40 m/s) or the Exposure Category is C or D, or all conditions of Section R703.11.2.1 are not met, the adjusted design pressure rating for the assembly shall meet or exceed the loads listed in Tables R301.2(2) adjusted for height and exposure using Table R301.2(3).~~ Where the Vult wind speed does not exceed 140 mph, ~~T~~the design wind pressure rating of the vinyl siding for installation over solid sheathing as provided in the vinyl siding manufacturer's product specifications shall be adjusted for the following wall assembly conditions:

1. Ultimate wind speeds, Vult, greater than 115 mph and less than 130 mph:

~~1~~ a. For wall assemblies with foam plastic sheathing on the exterior side and gypsum wall board or equivalent on the interior side of the wall, the vinyl siding's design wind pressure rating shall be multiplied by 0.39.

~~2~~ b. For wall assemblies with foam plastic sheathing on the exterior side and no gypsum wall board or equivalent on the interior side of wall, the vinyl siding's design wind pressure rating shall be multiplied by 0.27.

The adjusted design pressure rating for the assembly shall meet or exceed the loads listed in Tables R301.2(2) adjusted for height and exposure using Table R301.2(3).

2. Ultimate wind speeds, Vult, greater than 130 mph and less than 140 mph:

a. The vinyl siding's design wind pressure rating shall be multiplied by 0.27.

The adjusted design pressure rating for the assembly shall meet or exceed the loads listed in Tables R301.2(2) adjusted for height and exposure using Table R301.2(3).

R703.11.2.3 Manufacturer specification. Where the vinyl siding manufacturer's product specifications provide an approved design wind pressure rating for installation over foam plastic sheathing, use of this design wind pressure rating shall be permitted and the siding shall be installed in accordance with the manufacturer's installation instructions.

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Date Submitted	7/27/2012	**Section**	R703.4	**Proponent**	T Stafford
Chapter	7	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Clarifies the limits of the prescriptive fastening table for wall coverings.

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

This language was originally developed by a small work group established by the Florida Building Commission, after the limit for using the prescriptive construction provisions in the IRC (and FBCR) was lowered from 110 mph to 100 mph (ASCE 7-98 wind speed maps). It became apparant that the IRC was lacking in terms of prescriptive criteria for high wind regions and clarification on the limits of the prescritpive criteria within the IRC. The group was charged with developing and/or referencing specific prescriptive criteria for high wind regions in the FBCR. The work of this group was incorporated in the 2006 Supplement to the 2004 FBCR and has been carried forward in the 2007 and 2010 FBCR as well. The group also made an effort to clearly establish the limits of the prescriptive provisions in the IRC. This is one of a series of proposals that seeks to reinstate the provisions and criteria established by this work group.

This proposal sets the upper limit on the prescriptive fastening provisions of Table R703.4 at 30 psf. This limit is consistent with that prescribed by ICC 600.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to building and property owners relative to cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R703.4 Attachments. Unless specified otherwise, all wall coverings shall be securely fastened ~~in accordance with Table R703.4 or~~ with ~~other~~ approved aluminum, stainless steel, zinc-coated or other approved corrosion-resistive fasteners. Where wind pressures determined in accordance with Table R301.2(2) ~~the basic wind speed in accordance with Figure R301.2(4)A is 110 miles per hour (49 m/s) or higher, the attachment of wall coverings shall be designed to resist the component and cladding loads specified in Table R301.2(2)~~, adjusted for height and exposure in accordance with Table R301.2(3) do not exceed 30 psf, wall coverings are permitted to be installed in accordance with Table R703.4.

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Date Submitted	7/27/2012	**Section**	R703.5.3	**Proponent**	T Stafford
Chapter	7	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

This proposal establishes limits for prescriptive attachmend of wood shakes and shingles wall coverings.

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

This language was originally developed by a small work group established by the Florida Building Commission, after the limit for using the prescriptive construction provisions in the IRC (and FBCR) was lowered from 110 mph to 100 mph (ASCE 7-98 wind speed maps). It became apparant that the IRC was lacking in terms of prescriptive criteria for high wind regions and clarification on the limits of the prescritpive criteria within the IRC. The group was charged with developing and/or referencing specific prescriptive criteria for high wind regions in the FBCR. The work of this group was incorporated in the 2006 Supplement to the 2004 FBCR and has been carried forward in the 2007 and 2010 FBCR as well. The group also made an effort to clearly establish the limits of the prescriptive provisions in the IRC. This is one of a series of proposals that seeks to reinstate the provisions and criteria established by this work group.

This proposal establishes a 30 psf limit for attaching wood shakes and shingles as wall coverings in accordance with the prescriptive provisions. This proposal also deletes the option for attaching wood shakes and shingles with staples.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to building and property owners relative to cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R703.5.3 Attachment. Wood shakes and shingles, and attachment and supports shall be capable of resisting the wind pressures determined in accordance with Table R310.2(2).Where wind pressures determined in accordance with Table R301.2(2) do not exceed 30 psf, ~~E~~ each shake or shingle shall be held in place by two hot-dipped zinc-coated, stainless steel, or aluminum nails or staples. The fasteners shall be long enough to penetrate the sheathing or furring strips by a minimum of 1/2 inch (13 mm) and shall not be overdriven. Where pressures determined in accordance with Table R301.2(2) exceed 30 psf, the attachment shall be designed to resist the prescribed wind pressures.

R703.5.3.1 Staple attachment. Reserved ~~Staples shall not be less than 16 gage and shall have a crown width of not less than 7/16 inch (11 mm), and the crown of the staples shall be parallel with the butt of the shake or shingle. In single course application, the fasteners shall be concealed by the course above and shall be driven approximately 1 inch (25 mm) above the butt line of the succeeding course and 3/4 inch (19 mm) from the edge. In double course applications, the exposed shake or shingle shall be face nailed with two casing nails, driven approximately 2 inches (51 mm) above the butt line and 3/4 inch (19 mm) from each edge. In all applications, staples shall be concealed by the course above. With shingles wider than 8 inches (203 mm) two additional nails shall be required and shall be nailed approximately 1 inch (25 mm) apart near the center of the shingle.~~

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Date Submitted	7/27/2012	**Section**	R703.7	**Proponent**	T Stafford
Chapter	7	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

This proposal establishes limits for prescriptive attachmend of masonry veneers.

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

This language was originally developed by a small work group established by the Florida Building Commission, after the limit for using the prescriptive construction provisions in the IRC (and FBCR) was lowered from 110 mph to 100 mph (ASCE 7-98 wind speed maps). It became apparant that the IRC was lacking in terms of prescriptive criteria for high wind regions and clarification on the limits of the prescritpive criteria within the IRC. The group was charged with developing and/or referencing specific prescriptive criteria for high wind regions in the FBCR. The work of this group was incorporated in the 2006 Supplement to the 2004 FBCR and has been carried forward in the 2007 and 2010 FBCR as well. The group also made an effort to clearly establish the limits of the prescriptive provisions in the IRC. This is one of a series of proposals that seeks to reinstate the provisions and criteria established by this work group.

This proposal establishes the limits of the prescriptive provisions for attaching masonry veneer. The workgroup sought the input of the brick industry when developing these proposals.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to building and property owners relative to cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R703.7 Stone and masonry veneer, general. Stone and masonry veneer shall be installed in accordance with this chapter, Table R703.4 and Figure R703.7. These veneers installed over a backing of wood or cold-formed steel shall be limited to the first story above-grade plane and shall not exceed 5 inches (127 mm) in thickness. See Section R602.10 for wall bracing requirements for masonry veneer for woodframed construction and Section R603.9.5 for wall bracing requirements for masonry veneer for cold-formed steel construction. The provisions of this section are limited to areas where the V_{asd} as determined in accordance with Section R301.2.1.3, is equal to or less than 130 mph.

R703.7.4.1 Size and spacing. Veneer ties, if strand wire, shall not be less in thickness than No. 9 U.S. gage [(0.148 inch) (4 mm)] wire and shall have a hook embedded in the mortar joint, or if sheet metal, shall be not less than No. 22 U.S. gage by [(0.0299 inch) (0.76 mm)] 7/8 inch (22 mm) corrugated. Each tie shall support not more than 2.67 square feet (0.25 m2) of wall area and shall be spaced not more than 32 inches (813 mm) on center horizontally and 24 inches (635 mm) on center vertically.

Exception:

1. In Seismic Design Category D0, D1 or D2 or townhouses in Seismic Design Category C or in wind areas of more than 30 pounds per square foot pressure (1.44 kPa), each tie shall support not more than 2 square feet (0.2 m2) of wall area.

2. Where the V_{asd} as determined in accordance with Section R301.2.1.3 exceeds 110 mph (176.99 km/h) or is less than or equal to 130 mph (208 km/h), each tie shall support not more than 1.8 square feet (0.167 m^2) of wall area and anchors shall be spaced at a maximum 18 inches (457 mm) horizontally and vertically.

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Date Submitted	7/27/2012	**Section**	Table R703.4	**Proponent**	T Stafford
Chapter	7	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Modifies the prescriptive fastening table for wall coverings to be consistent with the 2010 FBCR. Removes table entries that permit the use of staples.

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

This language was originally developed by a small work group established by the Florida Building Commission, after the limit for using the prescriptive construction provisions in the IRC (and FBCR) was lowered from 110 mph to 100 mph (ASCE 7-98 wind speed maps). It became apparant that the IRC was lacking in terms of prescriptive criteria for high wind regions and clarification on the limits of the prescritpive criteria within the IRC. The group was charged with developing and/or referencing specific prescriptive criteria for high wind regions in the FBCR. The work of this group was incorporated in the 2006 Supplement to the 2004 FBCR and has been carried forward in the 2007 and 2010 FBCR as well. The group also made an effort to clearly establish the limits of the prescriptive provisions in the IRC. This is one of a series of proposals that seeks to reinstate the provisions and criteria established by this work group.

This proposal reinstates Table R703.4 in the 2010 FBCR. Notable changes include deleting the use of stapled fasteners for securing wall coverings and deleting the use of particleboard as a permitted wall covering.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to building and property owners relative to cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

TABLE R703.4

WEATHER-RESISTANT SIDING ATTACHMENT AND MINIMUM THICKNESS

Siding Material	Nominal Thicknessa (inches)	Joint Treatment	Water-Resistive Barrier Required	Type of Supports for the Siding Material and Fastenersb,d					
				Wood or Wood Structural Panel Sheathing	Fiberboard Sheathing into Stud	Gypsum Sheathing into Stud	Foam Plastic Sheathing into Stud	Direct to Studs	Number or Spacing of Fasterners
NO change									
Hardboardk Panel siding-vertical	See Section R703.3.3	–	Yes	See Section R703.3.4					
Hardboardk Lap-siding-horizontal	See Section R703.3.3	Note q	Yes	See Section R703.3.4					
Steelh	29 ga.	Lap	Yes	0.113 nail 1 ¾" ~~Staple 1 ¾"~~	0.113 nail 2 ¾" ~~Staple 2 1/2 "~~	0.113 nail 2 1/2" ~~Staple 2 1/4"~~	0.113 naily ~~Staple~~y	Not allowed	Same as stud spacing
~~Particleboard panels~~	~~3/8 1/2~~	~~–~~	~~Yes~~	~~6d box nail (2" x 0.099")~~	~~6d box nail (2" x 0.099")~~	~~6d box nail (2" x 0.099")~~	~~box nail~~	~~6d box nail (2" x 0.099")~~ ~~3/8 not allowed~~	~~6" panel edges~~ ~~12" inter. Sup.o~~
	~~5/8~~	~~–~~	~~Yes~~	~~6d box nail (2" x 0.099")~~	~~8d box nail (2 1/2" x 0.113")~~	~~8d box nail (2 1/2" x 0.113")~~	~~box nail~~	~~6d box nail (2" x 0.099")~~	
No change									
Vinyl sidingm	0.035	Lap	Yes	See Section ~~R703.3.4~~ R703.11.					
Woodj rustic, drop	3/8 Min	Lap	Yes	Fastener penetration into stud-1"				0.113 nail -2 1/2" ~~Staple 2~~"	Face nailing up to 6" widths, 1 nail per bearing; 8"
Shiplap	19/32 Average	Lap	Yes						
Bevel	7/16								
Butt tip	3/16	Lap	Yes						

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								widths and over, 2 nails per bearing	
Fiber cement panel sidingr	**No change**	**No change**	**No change**	**No change**	**No change**	**No change**	**No change**	**No change**	**No change**
Fiber cement lap sidingr	**No change**	**No change**	**No change**	**No change**	**No change**	**No change**	**No change**	~~6d corrosion-resistant nailw~~	Note w

No change to the remaining text of the table.

For SI: 1 inch = 25.4 mm.

a-b no change

c. Reserved.

d-i no change.

m. Reserved.

n. no change

o. Reserved.

P – z no change .

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Date Submitted	7/24/2012	**Section**	R801.1	**Proponent**	Michael Goolsby
Chapter	8	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

The provisions contained in this chapter have unique specifications for application in the HVHZ. The beginning of the chapter needs to refer the reader to Chapter 44 for the applicable HVHZ requirements.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. It provides clarity and direction in the code.

Impact to building and property owners relative to cost of compliance with code

No impact. It provides clarity and direction in the code.

Impact to industry relative to the cost of compliance with code

Cost savings by providing clarity and direction in the code.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

None. The MOD provides direction and clarity for applicable HVHZ requirements.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Strengthens the code by providing clarity and direction when working in the HVHZ.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

The modification does not discriminate against materials, products, methods or systems of construction.

Does not degrade the effectiveness of the code

This modification enhances the code by directing users to the proper chapter of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

This change is not necessary as Section R301.1 directs users to the provisions of Chapter 44 for structures located in the High Velocity Hurricane Zone.

S5630-G1

S5630 Text Modification

R801.1 Application. The provisions of this chapter shall control the design and construction of the roof-ceiling system for all buildings.

Exception: Buildings and structures located within the High-Velocity Hurricane Zone shall comply with the provisions of Chapter 44.

Page: 1

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This proposed modification reinstates guidance to applicable HVHZ sections of the code maintaining consistency with the legislative intent to preserve HVHZ wind provisions.

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Date Submitted	7/26/2012	**Section**	R802.3.1	**Proponent**	T Stafford
Chapter	8	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Requires the use of ring shank nails for roof decking attachment. This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Rationale

This language is currently contained in the 2010 FBC. No new requirements are being proposed, except the wind speeds specified have been updated to Vult values. The FBCR has required the use of ring shank nails for decking attachment since the 2006 Supplement to the 2004 code.

The roof is one of the most vulnerable parts of building when subjected to hurricane force winds. Maintaining the integrity of the roof decking during hurricanes and other wind storms will substantially increase the odds of a successful performance of the building.

The requirements are based on hundreds of true wood structural panel tests. Extensive roof sheathing fastening tests at Clemson University (Reinhold 2000 – 2002, McKinley 2001) and at the International Hurricane Center – Florida International University (Reinhold, Alvarez 2003) compared the Mean Failure Pressure in psf for roof sheathing panels using both the 8d common and the 8d ring shank nails spaced at 6 inches as prescribed by the code. Sheathing consisted of 5/8 inch thick plywood attached to nominal 2x4 Southern Yellow Pine rafters.

The results of these tests were as follows:

(1) Mean ultimate uplift capacity for panels attached with 8d common nails at 6 inch spacing: 126 pounds per square foot
(2) Mean ultimate uplift capacity for panels attached with 8d ring shank nails at 6 inch spacing: 292 pounds per square foot

This shows a 131% improvement in performance when 8d ring shank nails are used instead of 8d common nails.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to building and property owners relative to cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBC. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R803.2.3 Installation. Wood structural panel used as roof sheathing shall be installed with joints staggered in accordance with Section R802.3.1 ~~or not staggered in accordance with Table R602.3(1), or APA E30~~ for wood roof framing or in accordance with AISI 230 ~~with Table R804.3~~ for steel roof framing.

R803.2.3.1 Sheathing fastenings. Wood structural panel sheathing shall be fastened to roof framing with 8d annular ring-shank nails at 6 inches on center at edges and 6 inches on center at intermediate framing. Ring-shank nails shall have the following minimum dimensions:

1. 0.113 inch nominal shank diameter
2. Ring diameter of 0.012 over shank diameter
3. 16 to 20 rings per inch
4. 0.280 inch full round head diameter
5. 2 inch nail length

Where roof framing with a specific gravity, 0.42 = G < 0.49 is used, spacing of ring-shank fasteners shall be 4 inches on center in nailing zone 3 in accordance with Figure R803.2.3.1 where V_{ult} is 160 mph or greater.

Exceptions:

1. Where roof framing with a specific gravity, 0.42 = G < 0.49 is used, spacing of ring-shank fasteners shall be permitted at 12 inches on center at intermediate framing in nailing zone 1 for any V_{ult} and in nailing zone 2 for V_{ult} less than or equal to 140 mph in accordance with Figure 2304.7.2.1.1.

2. Where roof framing with a specific gravity, G = 0.49 is used, spacing of ring-shank fasteners shall be permitted at 12 inches on center at intermediate framing in nailing zone 1 for any V_{ult} and in nailing zone 2 for V_{ult} less than or equal to 150 mph in accordance with Figure 2304.7.2.1.1.

3. Where roof framing with a specific gravity, G = 0.49 is used, 8d common or 8d hot dipped galvanized box nails at 6 inches on center at edges and 6 inches on center at intermediate framing shall be permitted for V_{ult} less than or equal to 130 mph in accordance with Figure 2304.7.2.1.1.

4. Where roof diaphragm requirements necessitate a closer fastener spacing.

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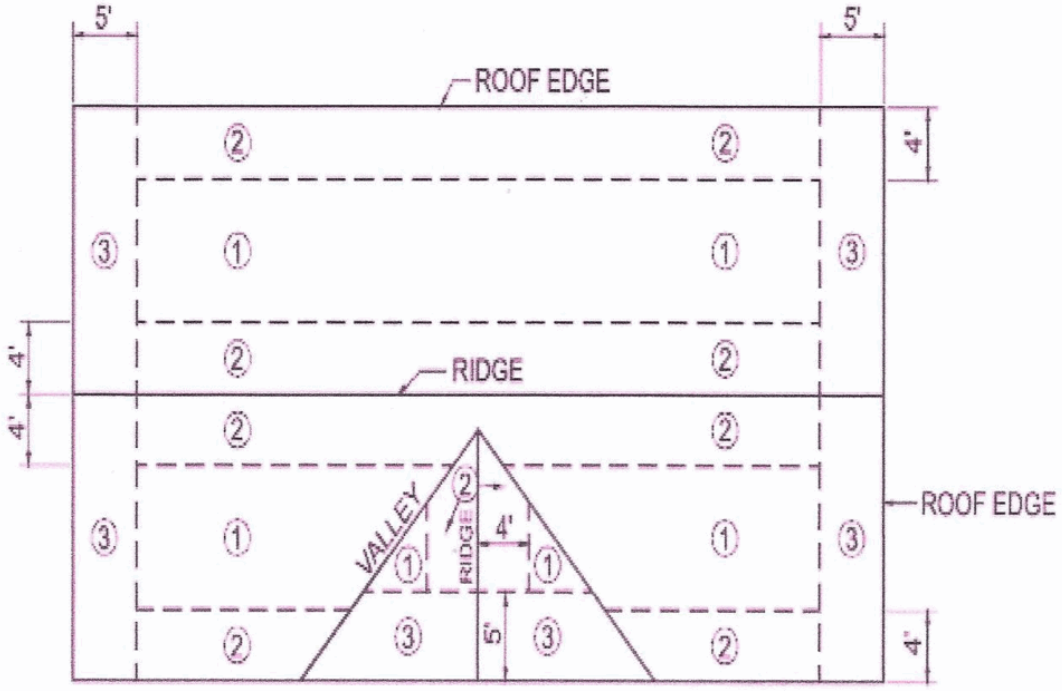


FIGURE R803.2.3.1 ROOF SHEATHING NAILING ZONES

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Date Submitted	8/2/2012	**Section**	R802	**Proponent**	T Stafford
Chapter	8	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Deletes the prescriptive wood framing construction provisions for roof framing that do not apply to high wind areas.

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

The basis for this proposal was originally developed by a small work group established by the Florida Building Commission, after the limit for using the prescriptive construction provisions in the IRC (and FBCR) was lowered from 110 mph to 100 mph (ASCE 7-98 wind speed maps). It became apparent that the IRC was lacking in terms of prescriptive criteria for high wind regions and clarification on the limits of the prescriptive criteria within the IRC. The group was charged with developing and/or referencing specific prescriptive criteria for high wind regions in the FBCR. The work of this group was incorporated in the 2006 Supplement to the 2004 FBCR and has been carried forward in the 2007 and 2010 FBCR as well. The group also made an effort to clearly establish the limits of the prescriptive provisions in the IRC. This is one of a series of proposals that seeks to reinstate the provisions and criteria established by this work group.

This proposal clearly establishes the limits of the non-high wind provisions of the IRC by deleting the provisions that do not apply to Florida. This reduces the potential for confusion regarding the applicable provisions of the residential code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to building and property owners relative to cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

R802.1 General Requirements. Roof and ceiling framing of wood construction shall be designed and constructed in accordance with the provisions of this Section.

R802.1.1 ~~R802.1~~ Identification. [No change to text]

R802.1.1.1 ~~R802.1.1~~ Blocking. [No change to text]

R802.1.7 R802.10 Wood trusses.

R802.1.7.1 ~~R802.10.1~~ Truss design drawings. Truss design drawings, prepared in conformance with Section R802.1.7.1, ~~R802.10.1~~ shall be provided to the building official and approved prior to installation. Truss design drawings shall include, at a minimum, the information specified below. Truss design drawing shall be provided with the shipment of trusses delivered to the jobsite.

1. Ultimate design wind speed, V_{ult}, and exposure category.

2. Slope or depth, span and spacing.

3. Location of all joints.

4. Required bearing widths.

5. Design loads as applicable.

    5.1 Top chord live load (as determined from Section R301.6).

    5.2 Top chord dead load.

    5.3 Bottom chord live load.

    5.4 Bottom chord dead load.

    5.5 Concentrated loads and their points of application.

    5.6 Controlling wind and earthquake loads.

6. Adjustments to lumber and joint connector design values for conditions of use.

7. Each reaction force and direction.

8. Joint connector type and description (e.g., size, thickness or gauge) and the dimensioned location of each joint connector except where symmetrically located relative to the joint interface.

9. Lumber size, species and grade for each member.

10. Connection requirements for:

    10.1 Truss to truss girder.

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10.2 Truss ply to ply.

10.3 Field splices.

11. Calculated deflection ratio and/or maximum description for live and total load.

12. Maximum axial compression forces in the truss members to enable the building designer to design the size, connections and anchorage of the permanent continuous lateral bracing. Forces shall be shown on the truss design drawing or on supplemental documents.

13. Required permanent truss member bracing location.

R802.1.7.2 ~~**R802.10.2**~~ **Design.** Wood trusses shall be designed in accordance with accepted engineering practice. The design and manufacture of metal-plate-connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by a registered professional where required by Florida Statutes ~~the statutes of the jurisdiction in which the project is to be constructed in accordance with Section R106.1~~.

R802.1.7.2.1 ~~**R802.10.2.**~~ **Applicability limits. Reserved.**

R802.1.7.3 ~~**R802.10.3**~~ **Bracing.** [No other change to IRC text]

R802.1.7.4 ~~**R802.10.4**~~ **Alterations to trusses.** [No other change to IRC text]

R802.1.7.5 ~~**R802.10.5**~~ **Truss to wall connection.** Trusses shall be connected to wall plates by the use of approved connectors having a resistance to design uplift, lateral and shear forces. Trusses shall be installed in accordance with the manufacturer's design and specifications. ~~For roof assemblies subject to wind uplift pressures of 20 pounds per square foot (0.958 kN/m2) or greater, as established in Table R301.2(2), adjusted for height and exposure per Table R301.2(3), see Section R802.2.9.~~

R802.1.8 ~~**R802.7**~~ **Cutting and notching.** [No other change to IRC text]

R802.1.8.1 ~~**R802.7.1**~~ **Sawn lumber.** [No other change to IRC text]

R802.1.8.1.1 ~~**R802.7.1.1**~~ **Cantilevered portions of rafters.** [No other change to IRC text]

R802.1.8.1.2 ~~**R802.7.1.2**~~ **Ceiling joist taper cut.** [No other change to IRC text]

R802.1.8.2 ~~**R802.7.2**~~**Engineered wood products.** [No other change to IRC text].

R802.2 Design and construction. Roof-ceilings of light-frame wood construction shall be designed and constructed in accordance with the provisions of Section R301.2.1.1 and Section R802.1.

Exceptions:

1. For rafter connections to the top plate, straps and/or clips shall extend such that the top nail is within 1 inch of the top of the rafter with one or more nails installed on the opposite side of the rafter.

2. Roof sheathing shall be at a minimum attached in accordance with Section R803.2.3.

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~~The framing details required in Section R802 apply to roofs having a minimum slope of three units vertical in 12 units horizontal (25 percent slope) or greater. Roof ceilings shall be designed and constructed in accordance with the provisions of this chapter and Figures R606.11(1), R606.11(2) and R606.11(3) or in accordance with AFPA/NDS. Components of roof ceilings shall be fastened in accordance with Table R602.3(1).~~

Delete the remainder of Section R802 and show as "Reserved."

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S6003

Date Submitted	8/2/2012	**Section**	R804	**Proponent**	T Stafford
Chapter	8	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Deletes the prescriptive steel framing construction provisions that do not apply to high wind areas.

Rationale

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Section R301.2.1.1 in the 2010 FBCR requires compliance with AISI S230 for steel frame construction where Vult equals or exceeds 115 mph. Vult exceeds 115 mph for the entire state of Florida for Risk Category II buildings.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to building and property owners relative to cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Impact to industry relative to the cost of compliance with code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Does not degrade the effectiveness of the code

This language is currently contained in the 2010 FBCR. No new requirements are being proposed.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

SECTION R804

STEEL ROOF FRAMING

RESERVED

Reserve Section R804 in it's entirety.

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S4979

Date Submitted	7/6/2012	**Section**	2101.6	**Proponent**	Michael Goolsby
Chapter	21	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

While this entire Chapter is applicable for the HVHZ it makes reference and provides direction to sections which are not applicable. The purpose of this proposed modification is to provide guidance to the applicable and equivalent HVHZ sections. In this way, compliance with the intent of these provisions can be maintained in all jurisdictions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Removes confusion by providing accurate direction regarding application of applicable code sections.

Impact to building and property owners relative to cost of compliance with code

Removes confusion by providing accurate direction regarding application of applicable code sections.

Impact to industry relative to the cost of compliance with code

Removes confusion by providing accurate direction regarding application of applicable code sections.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

It does so by ensuring direction to applicable sections of the code are provided.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

It does so by ensuring direction to applicable sections of the code are provided.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Does not degrade the effectiveness of the code

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S4979-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

This change is not necessary as Section R301.1 directs users to the provisions of Chapter 44 for structures located in the High Velocity Hurricane Zone. Notching and drilling should be no different anywhere in the state.

M2101.6 Drilling and notching. Wood-framed structural members shall be drilled, notched or altered in accordance with the provisions of Sections R502.8, R602.6, R602.6.1 and R802.7. Holes in load bearing members of cold-formed steel light-frame construction shall be permitted only in accordance with Sections R505.2.5, R603.2.5 and R804.2.5. In accordance with the provisions of Sections R505.3.5, R603.3.4 and R804.3.4, cutting and notching of flanges and lips of load-bearing members of cold-formed steel lightframe construction shall not be permitted. Structural insulated panels (SIPs) shall be drilled and notched or altered in accordance with the provisions of Section R613.

Exception: Buildings and structures located within the High Velocity Hurricane Zone shall comply with the provisions of Chapter 44.

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S4984

Date Submitted	7/6/2012	**Section**	2603.2	**Proponent**	Michael Goolsby
Chapter	26	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Section formatting

Rationale

While this entire Chapter is applicable for the HVHZ it makes reference and provides direction to sections which are not applicable. The purpose of this proposed modification is to provide guidance to the applicable and equivalent HVHZ sections. In this way, compliance with the intent of these provisions can be maintained in all jurisdictions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

Removes confusion by providing accurate direction regarding application of applicable code sections.

Impact to building and property owners relative to cost of compliance with code

Removes confusion by providing accurate direction regarding application of applicable code sections.

Impact to industry relative to the cost of compliance with code

Removes confusion by providing accurate direction regarding application of applicable code sections.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

It does so by ensuring direction to applicable sections of the code are provided.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

It does so by ensuring direction to applicable sections of the code are provided.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Does not degrade the effectiveness of the code

This modification provides guidance to the applicable code sections and does not limit the use or compliance of materials.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S4984-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

This change is not necessary as Section R301.1 directs users to the provisions of Chapter 44 for structures located in the High Velocity Hurricane Zone. Notching and drilling should be no different anywhere in the state.

P2603.2 Drilling and notching. Wood-framed structural members shall not be drilled, notched or altered in any manner except as provided in Sections R502.8, R602.6, R802.7 and R802.7.1. Holes in load-bearing members of cold-formed steel light-frame construction shall be permitted only in accordance with Sections R505.2.5, R603.2.5 and R804.2.5. In accordance with the provisions in Sections R505.3.5, R603.3.4 and R804.3.4, cutting and notching of flanges and lips of load-bearing members of cold-formed steel lightframe construction shall not be permitted. Structural insulated panels (SIPs) shall be drilled and notched or altered in accordance with the provisions of Section R613.7.

Exception: Buildings and structures located within the High Velocity Hurricane Zone shall comply with the provisions of Chapter 44.

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Date Submitted	7/31/2012	**Section**	4403.11.2	**Proponent**	Joseph Belcher
Chapter	44	**Affects HVHZ**	No	**Attachments**	No
General Comments	Yes				
Alternate Language	Yes				

Related Modifications

Summary of Modification

Modifies sunroom categories to adopt those of AAMA 2100-11

Rationale

The proposal update the sunroom categories to AAMA 2100-11 which are not addressed in the base code.The industry encountered difficulties with widely varying interpretations regarding habitable versus non-habitable sunrooms among building departments. Some jurisdictions claimed the categories of the standard conflicted with the building code and that the code classified sunrooms as habitable. Some jurisdictions claimed since the HVHZ section of the code did not address sunrooms they could not be built in the HVHZ. Although there is (and was) nothing in the code stating a sunroom is a habitable space, there is a Declaratory Statement stating sunrooms can be designed as non-habitable spaces. (DCA05-DEC-235). In addition, an interpretation was appealed to the Broward Board of Rules and Appeals which stated sunrooms could be built in Broward County. To deal with these issues the industry proposed placing the sunroom categories contained in the adopted standard directly into the code. Inclusion of the AAMA Sunroom Categories within the code has almost totally eliminated the problem of improper classification.

Due to abuses by some, such as adding air conditioning to a sunroom after the final inspection and C of O, some jurisdictions required all sunrooms to meet the provisions for habitable spaces. The result was an unnecessary financial burden on the consumer that simply wanted an non-conditioned space providing shelter from the elements for recreational use. To assist jurisdictions in citing after the fact violations, the language requiring the categorization of the sunroom at the time of permit application was included. This proposal is intended to preserve all that work to benefit enforcement, the public, and the industry.

The base code does not adequately address sunroom construction in the body of the code.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The change will have no impact on the cost of compliance relative to the enforcement of the code since the provisions are currently in effect in the HVHZ.

Impact to building and property owners relative to cost of compliance with code

No impacts since the provisions are currently in effect in the HVHZ.

Impact to industry relative to the cost of compliance with code

No impacts since the provisions are currently in effect in the HVHZ.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

The proposal retains and updates the categories for sunrooms. The property owner or another responsible party will categorize the sunroom at permit application providing the public reasonable alternates for constructing sunrooms

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

The proposal strengthens the code by adding language from an adopted standard for clarification and thereby assisting in interpretation of the code.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

The proposal does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities, and removes the potential for discriminatory interpretations of the code.

Does not degrade the effectiveness of the code

The proposal increases the effectiveness of the code by providing clarifying language to assist in the correct interpretation of the code.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5850-A2

Proponent Joseph Belcher **Submitted** 9/23/2012 **Attachments** Yes Belcher

Text of Modification

~~R4403.11.2~~ 2003.9.2 TEXT OF MODIFICATION #5850 UNCHANGED.

Rationale

I have been advised a Mod has been submitted to delete R4403.11.2 by MDC. As the proponent of #5850 I am requesting relocation of the updated AAMA Sunroom Categories to a new Section 2003.9.2 as suggested by the party making the Public Comment.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

See original Mod #5850.

Impact to building and property owners relative to cost of compliance with code

See original Mod #5850.

Impact to industry relative to the cost of compliance with code

See original Mod #5850.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

See original Mod #5850.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

See original Mod #5850.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

See original Mod #5850.

Does not degrade the effectiveness of the code

See original Mod #5850.

General Comment - 08/09/2012 - 09/23/2012

S5850-G1

Proponent Jaime Gascon **Submitted** 9/21/2012 **Attachments** No

Comment:

This change should be made to Chapter 20 of the FBC-Building since the definitions are different than what is carrying forward from the FL specifics in the HVHZ. (Presently there is no change proposed to correlate the definitions in Chapter 20.) MODs S4403 through S4411 are proposed to elliminate duplicative language of the HVHZ and simply refer to the FBC - Building volume.

R4403.11.2 Sunroom Categories. Sunrooms shall be categorized in one of the following categories by the permit applicant, design professional, or the property owner where the sunroom is being constructed.

~~**Category I:** A roof or a covering of an outdoor space. The openings shall be permitted to be enclosed with insect screening or 0.5 mm (20 mil) maximum thickness plastic film. The space is defined as non-habitable and unconditioned.~~

~~**Category II:** A roof or a covering of an outdoor space with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The space is defined as non-habitable and unconditioned.~~

~~**Category III:** A roof or a covering of an outdoor space with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The sunroom complies with additional requirements for forced-entry resistance, air-leakage resistance and water-penetration resistance. The space is defined as non-habitable and unconditioned.~~

~~**Category IV:** A roof or a covering of an outdoor space with enclosed walls. The sunroom is designed to be heated and/or cooled by a separate temperature control or system and is thermally isolated from the primary structure. The sunroom complies with additional requirements for forced-entry resistance, water penetration resistance, air-leakage resistance, and thermal performance. The space is defined as habitable and conditioned.~~

~~**Category V:** A roof or a covering of an outdoor space with enclosed walls. The sunroom is designed to be heated and/or cooled and is open to the main structure. The sunroom complies with additional requirements for forced-entry resistance, water-penetration resistance, air-leakage resistance, and thermal performance. The space is defines as habitable and conditioned~~.

Category I: A Thermally Isolated Sunroom with walls that are either open or enclosed with insect screening or 0.5 mm (20 mil) maximum thickness plastic film. The space is defined as a non-habitable, non-conditioned sunroom.

Category II: A Thermally Isolated Sunroom with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The space is defined as a non-habitable, non-conditioned sunroom.

Category III: A Thermally Isolated Sunroom with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The sunroom fenestration complies with additional requirements for air infiltration resistance and water penetration resistance. The space is defined as a non-habitable, non-conditioned sunroom.

Category IV: A Thermally Isolated Sunroom with enclosed walls. The sunroom is designed to be heated and or cooled by a separate temperature control or system and is thermally isolated from the primary structure. The sunroom fenestration complies with additional requirements for air infiltration resistance, water penetration resistance, and thermal performance. The space is defined as a non-habitable and conditioned sunroom.

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Category V: A Sunroom with enclosed walls. The sunroom is designed to be heated and or cooled and is open to the main structure. The sunroom fenestration complies with additional requirements for air infiltration resistance, water penetration resistance, and thermal performance. The space is defined as a habitable and conditioned sunroom.

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~~R4403.11.2~~ 2003.9.2 TEXT OF MODIFICATION #5850 UNCHANGED.

S5850 -A2 Text Modification
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S5010

Date Submitted	7/9/2012	**Section**	4403	**Proponent**	Michael Goolsby
Chapter	44	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Eliminating unnecessary duplication of Chapter 44 HVHZ provisions

Rationale

Since the inception of the FBC, the content of Chapter 44 of the FBC, R has been a duplication of the sections contained in the FBC, Building volume. This proposed modification is intended to maintain the continuation of the current level of safety for the protection of life and property unchanged. Importantly, the proposed modification eliminates the need to unnecessarily duplicate more than one-hundred pages into the FBC, R volume, thereby reducing the size of the text contained in the FBC. Additionally, the proposed modification prevents the need to replace all of the non-wind related sections which were removed by legislative directive with dozens of individual modifications, each requiring review and approval; this process would otherwise be unavoidable in order to create a crucial integration of applicable and relevant building code sections into Chapter 44 requirements. In short, this proposed modification is a simplified approach resulting in identical code requirements but through a less time consuming, less complicated and less duplicative process.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to building and property owners relative to cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

It does so by ensuring direction to applicable sections of the code are provided.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

It does so by eliminating the need to unnecessarily duplicate building code provisions and affects a reduction in the number of code pages to be compiled, reviewed, edited and printed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification does not curtail the use of any material, products, methods or systems of construction already deemed acceptable by the Florida Building Code or any alternate materials, design and methods of construction and equipment acceptable to the code official.

Does not degrade the effectiveness of the code

This modification does not degrade the effectiveness of the code; instead, it maintains the applicability of relevant base code requirements as has been the case since the first edition of the Florida Building Code.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5010-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

Creates a reference to Chapter 16 of the FBC-B. The FBC-R was created to be a free standing document and as such should include the language if it meets the criteria for a Florida specific amendment.

S5010 Text Modification

Page: 1

SECTION R4403

HIGH-VELOCITY HURRICANE ZONES—GENERAL

R4403.1 ~~**General design requirements**~~ **Refer to Chapter 16 of the Floirda Building Code, Building.**

~~**R4403.1.1** Any system, method of design or method of construction shall admit of a rational analysis in accordance with well-established principles of mechanics and sound engineering practices.~~

~~**R4403.1.2** Buildings, structures and all parts thereof shall be designed and constructed to be of sufficient strength to support the estimated or actual imposed dead, live, wind, and any other loads, both during construction and after completion of the structure, without exceeding the allowable materials stresses specified by this code.~~

~~**R4403.1.6** Floor and roof systems shall be designed and constructed to transfer horizontal forces to such parts of the structural frame as are designed to carry these forces to the foundation. Where roofs or floors are constructed of individual prefabricated units and the transfer of forces to the building frame and foundation is totally or partially dependent on such units, the units and their attachments shall be capable of resisting applied loads in both vertical and both horizontal directions. Where roofs or floors are constructed of individual prefabricated units and the transfer of forces to the building frame and foundation is wholly independent of such units, the units and their attachments shall be capable of resisting applied loads normal to the surface, in and out.~~

~~**R4403.2 General design for specific occupancies and structures.**~~

~~**R4403.2.1 Fences.** Fences not exceeding 6 feet (183 cm) in height from grade may be designed for 75 mph (33 m/s) fastest mile wind speed or V_{asd} as determined in accordance with Section R301.2.1.3 of 90 mph (40 m/s).~~

~~**R4403.2.1.1 Wood fences.** Wood fence design shall be as specified by Section R4409.15.~~

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~~SECTION R4403.2~~
~~HIGH-VELOCITY HURRICANE ZONES—~~
~~DEFLECTION~~

~~**R4403.2.1 Allowable deflections.** The deflection of any structural member or component when subjected to live, wind and other superimposed loads set forth herein shall not exceed the following:~~

~~1.~~	~~Roof and ceiling or components supporting plaster~~	~~L/360~~
~~2.~~	~~Roof members or components not supporting plaster under~~	~~L/240~~
~~3.~~	~~Floor members or components~~	~~L/360~~
~~4.~~	~~Vertical members and wall members or components consisting of or supporting material that hardens in place, is brittle or lacks resistance to cracking caused by bending strains.~~	~~L/360~~
~~5.~~	~~Vertical members and wall members or components not required to meet the conditions of Section R4403.2.1, Item 4.~~	~~L/180~~
~~6.~~	~~Roof and vertical members, wall members and panels of carports, canopies, marquees, patio covers, utility sheds and similar minor structures not to be considered living areas, where the roof projection is greater than 12 feet (3658 mm) in the direction of the span, for free-standing roofs and roofs supported by existing structures. Existing structures supporting such roofs shall be capable of supporting the additional loading.~~	~~L/180~~
~~7.~~	~~For Group R3 occupancies only, roof and vertical members, wall members and panels of carports, canopies, marquees, patio covers, utility sheds and similar minor structures not to be considered living areas, where the roof projection is 12 feet (3638 mm) or less in the direction of the span and for free standing roofs and roofs supported by existing structures.~~	~~L/80~~
~~8.~~	~~Members supporting screens only.~~	~~L/80~~
~~9.~~	~~Storm shutters and fold-down awnings, which in the closed position shall provide a minimum clear separation from the glass of 1 inch (25 mm) but not to exceed 2 inches (51 mm) when the shutter or awning is at its maximum point of permissible deflection~~	~~L/30~~
~~10.~~	~~Roofs and exterior walls of utility sheds having maximum dimensions of 10 feet length, 10 feet width, and 7 feet height.~~	~~L/80~~
~~11.~~	~~Roofs and exterior walls of storage buildings larger than utility sheds.~~	~~L/180~~

~~SECTION R4403.3~~
~~HIGH-VELOCITY HURRICANE ZONES—~~
~~VOLUME CHANGES~~

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R4403.3.1 Volume change. In the design of any building, structure or portion thereof, consideration shall be given to the relief of stresses caused by expansion, contraction and other volume changes.

SECTION R4403.6
HIGH-VELOCITY HURRICANE ZONES — ROOF DRAINAGE

R4403.6.1 Roof drainage. Where parapets or curbs are constructed above the level of the roof, provision shall be made to prevent rain water from accumulating on the roof in excess of that considered in the design, in the event the rain water drains, conductors or leaders become clogged.

R4403.6.2 Where roofs are not designed in accordance with Section R4403.6.1, overflow drains or scuppers shall be placed to prevent an accumulation of more than 5 inches (927 mm) of water on any portion of the roof. In determining the load that could result should the primary drainage system be blocked, the loads caused by the depth of water (i.e., head) needed to cause the water to flow out the scuppers or secondary drainage system shall be included.

R4403.6.3 Drains or scuppers installed to provide overflow drainage shall be not less in aggregate area than as shown in Figure R4403.6.3, but not less than 4 inches (102 mm) dimension in any direction and shall be placed in parapets not less than 2 inches (51 mm) nor more than 4 inches (102 mm) above the low point of the finished roofing surface and shall be located as close as practical to required vertical leaders, conductors or downspouts. The roof area to be taken in the sizing of the scuppers is the horizontal projection, except that, where a building wall extends above the roof in such a manner as to drain into the area considered, the one-half of the area of the vertical wall shall be added to the horizontal projection.

R4403.6.4 All roofs shall be designed with sufficient slope or camber to assure adequate drainage after the long-term deflection from dead load, or shall be designed to support maximum loads including possible ponding of water caused by deflection.

FIGURE R4403.6.3
REQUIRED AREA OF OVERFLOW SCUPPERS

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R4403.6.5 Ponding loads. Roofs shall be designed to preclude instability from ponding loads.

R4403.6.6 Each portion of a roof shall be designed to sustain the loads of all rainwater that could accumulate on it if the primary drainage system for that portion is obstructed. Ponding instability shall be considered in this situation. If the overflow drainage provisions contain drain lines, such lines shall be independent of any primary drain lines.

SECTION R4403.7
HIGH-VELOCITY HURRICANE ZONES — SPECIAL LOAD CONSIDERATIONS

R4403.7.3.6 Railing.

R4403.7.3.6.3 Laminated glazing will be permitted as an equal alternate to pickets, if tested by an accredited laboratory to satisfy the resistance requirements of this code for wind, live and kinetic energy impact loading conditions. The kinetic energy impact loading shall comply with ANSI Z97.1-1984 using a 400-foot-pound (542 N-m) energy impact. The safety requirements of the impact test shall be judged to have been satisfactorily met if breakage does not occur or numerous cracks and fissures occur but no shear or opening through which a 3-inches (76 mm) diameter sphere may freely pass. The glass panel shall remain within the supporting frame.

R4403.7.3.6.4 If the posts that support the top rail of exterior railings are substituted with glass, the assembly shall be tested to TAS 201, where the impacted glass continues to support the top rail and all applicable loads after impact.

R4403.7.8 Load combination. The safety of structures shall be checked using the provisions of 2.3 and 2.4 of ASCE 7 with commentary. Flood Load Fa mentioned in these load combinations shall be in accordance with Chapter 5 of ASCE 7.

Exception: Increases in allowable stress shall be permitted in accordance with TMS 402/ACI 530/ASCE 5 provided the load reduction factor of 0.75 of combinations 4 and 6 of ASCE 7 Section 2.4.1 shall not be applied.

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S5010 Text Modification

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~~SECTION R4403.9~~
~~HIGH VELOCITY HURRICANE ZONES — WIND LOADS~~

~~**R4403.9.1** Buildings and structures, and every portion thereof, shall be designed and constructed to meet the requirements of Chapters 26 through 31 of ASCE 7.~~

~~**R4403.9.2** Wind velocity (3-second gust) used in structural calculations shall be 170 miles per hour (76 m/s) in Broward County and 175 miles per hour (79 m/s) in Miami-Dade County.~~

~~**R4403.9.3** All buildings and structures shall be considered to be in Exposure Category C, unless Exposure Category D applies, as defined in Section 26.6 of ASCE 7.~~

~~**R4403.9.4** For wind force calculations, roof live loads shall not be considered to act simultaneously with the wind load.~~

~~**R4403.9.5** Utility sheds shall be designed for a wind load of not less than 15 pounds per square foot (718 Pa).~~

~~**R4403.9.6** The lateral force on rooftop structures and equipment with A_f less than (0.1Bh) located on buildings of all heights shall be determined from Eq. 29.5-1 of ASCE 7-10 in which the value of GC_r is 3.1. GC_r shall be permitted to be reduced linearly from 3.1 to 1.1 as the value of A_f is increased from (0.1Bh) to (Bh). The value of G from Section 26.9 of ASCE 7 shall not be used. Additionally, a simultaneous uplift force shall be applied, given by Eq. 29.5-1 of ASCE 7 in which GC_r = 1.5 and A_f is replaced by the horizontal projected area, A_r, of the rooftop structure or equipment. For the uplift force GC_r shall be permitted to be reduced linearly from 1.5 to 1.0 as the value of A_r is increased from (0.1BL) to (BL).~~

~~SECTION R4403.10~~
~~HIGH VELOCITY HURRICANE ZONES —~~

~~OVERTURNING MOMENT AND UPLIFT~~

~~**R4403.10.1** Computations for overturning moment and uplift shall be based on ASCE 7.~~

~~**R4403.10.2 Overturning** and uplift stability of any building, structure or part thereof taken as a whole shall be provided, and be satisfied by conforming to the load combination requirements of ASCE 7.~~

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S5010 Text Modification

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~~SECTION R4403.11~~

~~HIGH-VELOCITY HURRICANE ZONES — SUNROOMS~~

~~**R4403.11.1 Wind Loads**. Basic wind speed in miles per hour (mph) shall be determined in accordance with Section R4403.9.2. Sunrooms including exposed structures, components, cladding, and roof covering shall be designed to resist the wind loads as established in Section R4403.9.~~

~~**R4403.11.2 Sunroom Categories.** For the purpose of applying the criteria of the AAMA Standard for sunrooms based on the intended use, sunrooms shall be categorized in one of the following categories by the permit applicant, design professional, or the property owner where the sunroom is being constructed.~~

~~**Category I:** A roof or a covering of an outdoor space. The openings shall be permitted to be enclosed with insect screening or 0.5 mm (20 mil) maximum thickness plastic film. The space is defined as non-habitable and unconditioned.~~

~~Category II: A roof or a covering of an outdoor space with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The space is defined as non-habitable and unconditioned.~~

~~Category III: A roof or a covering of an outdoor space with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The sunroom complies with additional requirements for forced-entry resistance, air-leakage resistance and water-penetration resistance. The space is defined as non-habitable and unconditioned.~~

~~**Category IV:** A roof or a covering of an outdoor space with enclosed walls. The sunroom is designed to be heated and/or cooled by a separate temperature control or system and is thermally isolated from the primary structure. The sunroom complies with additional requirements for forced-entry resistance, water-penetration resistance, air-leakage resistance, and thermal performance. The space is defined as habitable and conditioned.~~

~~**Category V:** A roof or a covering of an outdoor space with enclosed walls. The sunroom is designed to be heated and/or cooled and is open to the main structure. The sunroom complies with additional requirements for forced-entry resistance, water-penetration resistance, air-leakage resistance, and thermal performance. The space is defines as habitable and conditioned.~~

~~SECTION R4403.12~~

~~HIGH-VELOCITY HURRICANE ZONES —~~

~~SCREEN ENCLOSURES~~

~~**R4403.12.1 Screen enclosures.**~~

~~**R4403.12.1.1** The wind loads on screen surfaces shall be per ASCE 7 Figure 29.5-2 based on the ratio of solid to gross area.~~

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R4403.12.1.2 Design shall be based on such loads applied horizontally inward and outward to the walls with a shape factor of 1.3 and applied vertically upward and downward on the roof with a shape factor of 0.7.

Exception: Screen enclosures shall be permitted to be designed in accordance with the AAF Guide to Aluminum Construction in High Wind Areas. Construction documents based on the AAF Guide to Aluminum Construction in High Wind Areas shall be prepared and signed and sealed by a Florida licensed architect or engineer.

R4403.12.2 Windbreakers.

R4403.12.2.1 Vinyl and acrylic glazed panels shall be removable. Removable panels shall be identified as removable by a decal. The identification decal shall essentially state "Removable panel SHALL be removed when wind speeds exceed 75 mph (34 m/s)." Decals shall be placed such that the decal is visible when the panel is installed.

R4403.12.2.2 Permanent frame shall be designed per Sections R4403.9 and R4403.12.1.2.

SECTION R4403.13

HIGH-VELOCITY HURRICANE ZONES —

FLOOD RESISTANCE

R4403.13.1.1 Flood resistance. Where the building or structure is located in a flood hazard areas established in Table 301.2(1), the building or structure, including enclosures below elevated buildings, shall be designed and constructed in accordance with Section R322 and this section.

SECTION R4403.15
HIGH-VELOCITY HURRICANE ZONES —
LOAD TESTS

R4403.15.1 Application. Whenever there is insufficient evidence of compliance with the provisions of this code or evidence that any material or any construction does not conform to the requirements of this code, or in order to substantiate claims for alternate materials or methods of construction, the building official may require testing by an approved agency, at the expense of the owner or his agent, as proof of his compliance. Testing methods shall be as specified by this code for the specific material.

R4403.15.2 Testing method. Such testing shall follow a nationally recognized standard test, or when there is no standard test procedure for the material or assembly in question, the building official shall require that the material or assembly under dead plus live load shall deflect not more than as set forth in Section R4403.2, and that the material or assembly shall sustain dead load plus twice the live load for a period of 24 hours, with a recovery of at least 80 percent or a 100 percent recovery after one-half test load.

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R4403.15.3 Alternate test methods. When elements, assemblies or details of structural members are such that their load-carrying capacity, deformation under load, or deflection cannot be calculated by rational analysis, their structural performance shall be established by test in accordance with test procedures as approved by the building official based on consideration of all probable conditions of loading.

R4403.15.4 Fatigue load testing. Where cladding assemblies (including cladding and connections) or roofing framing assemblies (including portions of roof structure and connections) are such that their load-carrying capacity or deformation under load cannot be calculated by rational analysis, the assemblies may be tested to resist the fatigue loading sequence given by Table R4403.15.4

TABLE R4403.15.4
FATIGUE LOADING SEQUENCE

RANGE OF TEST	NUMBER OF CYCLES1
0 to $0.5p_{max}$ 2	600
0 to 0.6_{max} 2	70
0 to $1.3p_{max}$ 2	1

1. Each cycle shall have minimum duration of 1 second and a maximum duration of 3 seconds and must be performed in a continuous manner.

2. P_{max} = 0.6 x ultimate design load in accordance with ASCE 7.

Assemblies shall be tested with no resultant failure or distress and shall have a recovery of at least 90 percent over maximum deflection.

Any cladding assembly not incorporated into the Florida Building Code, Building after successfully completing the impact test outlined in Section R4403.16, shall be subject to fatigue loading testing and shall obtain Product Approval by the building official.

SECTION R4403.16
HIGH-VELOCITY HURRICANE ZONES—IMPACT TESTS FOR WIND-BORNE DEBRIS

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R4403.16.1 All parts or systems of a building or structure envelope such as, but not limited, to exterior walls, roof, outside doors, skylights, glazing and glass block shall meet impact test criteria or be protected with an external protection device that meets the impact test criteria. Test procedures to determine resistance to wind-borne debris of wall cladding, outside doors, skylights, glazing, glass block, shutters and any other external protection devices shall be performed in accordance with this section.

Exception: The following structures or portion of structures shall not be required to meet the provisions of this section:

a. Roof assemblies for screen rooms, porches, canopies, etc., attached to a building that do not breach the exterior wall or building envelope and have no enclosed sides other than screen.

b. Soffits, soffit vents and ridge vents. Size and location of such vents shall be detailed by the designer and shall not compromise the integrity of the diaphragm boundary.

c. Vents in a garage with four or fewer cars. Size and location of such vents shall be detailed by the designer and shall not exceed the minimum required area by more than 25 percent.

d. Exterior wall or roof openings for wall or roof mounted HVAC equipment.

e. Openings for roof mounted personnel access roof hatches.

f. Storage sheds that are not designed for human habitation and that have a floor area of 720 square feet (67 m^2) or less are not required to comply with the mandatory windborne debris impact standards of this code.

g. Louvers as long as they properly considered ASCE 7 in the design of the building.

h. Buildings and structures for marinas, cabanas, swimming pools and greenhouses.

R4403.16.2 Large missile impact tests.

R4403.16.2.1 This test shall be conducted on three test specimens. This test shall be applicable to the construction units, assemblies and materials to be used up to and including 30 feet (9.1 m) in height in any and all structures.

R4403.16.2.2 The test specimens shall consist of the entire assembled unit, including frame and anchorage as supplied by the manufacturer for installation in the building, or as set forth in a referenced specification, if applicable. Fasteners used in mounting the test specimen shall be identical in size and spacing to what is used in field installations.

R4403.16.2.3 The large missile shall be comprised of a piece of timber having nominal dimensions of 2 inches by 4 inches (51 mm by 102 mm) weighing 9 pounds (4.1 kg).

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R4403.16.2.4 The large missile shall impact the surface of each test specimen at a speed of 50 feet per second (15.2 m/s).

R4403.16.2.5 Each test specimen shall receive two impacts except as noted in Sections R4403.16.2.5.1 and R4403.16.2.5.2, the first within a 5 inch (127 mm) radius circle having its center on the midpoint of the test specimen and the second within a 5 inch (127 mm) radius circle in a corner having its center in a location 6 inches (152 mm) away from any supporting members.

R4403.16.2.5.1 For window, glass block, fixed glass and skylight assemblies, both impacts shall be to glass or other glazing infill. For test specimens with more than one light of glass, a single light closest to the center of the assembly shall be selected and impacted twice in accordance with Section R4403.16.2.5. If a light of glass is sufficiently small to cause the 5 inch (127 mm) radius circle to overlap, two separate lights shall be impacted one time each.

R4403.16.2.5.1.1 For window, fixed glass and skylight assemblies comprised of different glass thickness, types of glass or different types of glazing infill, each separate thickness or type shall be impacted twice in accordance with Section R4403.16.2.5.

R4403.16.2.5.2 For doors, wall cladding and external protection devices, both impacts shall be to the thinnest section through the assembly. For doors, wall cladding and external protection devices with horizontal and/or vertical bracing, both impacts shall be within a single area that is not reinforced and shall be in accordance with Section R4403.16.2.5.

R4403.16.2.5.2.1 For doors with glass, the glass shall be impacted twice and the thinnest section through the assembly that is not glass shall be impacted twice in accordance with Section R4403.16.2.5.

R4403.16.2.6 In the case of glazing, if the three test specimens that comprise a test successfully reject the two missile impacts, they shall then be subjected to the cyclic pressure loading defined in Table R4403.16.

R4403.16.2.6.1 If external protection devices are employed to protect windows, fixed doors or skylights, they must resist the large missile impacts specified in Sections R4403.16.2.3 and R4403.16.2.4 without deformations which result in contact with the windows, fixed glass, glass block and doors or skylights they are intended to protect.

R4403.16.2.6.2 If external protection devices are not designed to be air tight, following the large missile impact test, they must resist an application of force corresponding to those listed in Table R4403.15.4 (fatigue load testing) without detaching from their mountings. The acting pressure cycles shall be simulated with loads applied through a

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~~mechanical system attached to the shutter specimen to apply uniformly around the shutter perimeter a force equal to the product of the required pressure and the area of the shutter specimen.~~

R4403.16.2.7 ~~If air leakage through the test specimen is excessive, tape may be used to cover any cracks and joints through which leakage is occurring. Tape shall not be used when there is a probability that it may significantly restrict differential movement between adjoining members. It is also permissible to cover both sides of the entire specimen and mounting panel with a single thickness of polyethylene film no thicker than 0.050 mm (2 mils). The technique of application is important in order that the full load is transferred to the specimen and that the membrane does not prevent movement or failure of the specimen. Apply the film loosely with extra folds of material at each corner and at all offsets and recesses. When the load is applied, there shall be no fillet caused by tightness of plastic film.~~

R4403.16.2.8 ~~A particular system of construction shall be deemed to comply with this recommended practice if three test specimens reject the two missile impacts without penetration and resist the cyclic pressure loading with no crack forming longer than 5 inches (127 mm) and 1/16 inch (1.6 mm) wide through which air can pass.~~

R4403.16.2.9 ~~If only one of the three test specimens in a test fails to meet the above listed criteria, one retest of this system of construction (another test sequence with three specimens) shall be permitted.~~

~~R4403.16.3 Small missile impact test.~~

R4403.16.3.1 ~~This test shall be conducted on three test specimens. This test shall be applicable to the construction units, assemblies, and materials to be used above 30 feet (9.1 m) in height in any and all structures.~~

R4403.16.3.2 ~~Each test specimen shall consist of the entire assembled unit, including frame and anchorage as supplied by the manufacturer for installation in the building, or as set forth in a referenced specification, if applicable. The fasteners used in mounting the test specimen shall be identical in size and spacing to those to be used in field installations.~~

R4403.16.3.3 ~~The missiles shall consist of solid steel balls each having a mass of 2 grams (0.07 oz) (+/- 5 percent) with a 5/16 inch (7.9 mm) nominal diameter.~~

R4403.16.3.4 ~~Each missile shall impact the surface of each test specimen at a speed of 130 feet per second (40 m/s).~~

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R440.16.3.5 Each test specimen shall receive 30 small missile impacts except as noted in Sections R4403.16.3.5.1 and Section R4403.16.3.5.2 delivered in groups of 10 at a time: the first 10 distributed uniformly over a 2 square foot (0.19 m^2) area located at the center of the test specimen, the second 10 distributed uniformly over a 2 square foot (0.19 m^2) area located at the center of the long dimension of the specimen near the edge, and the third 10 distributed uniformly over a 2 square foot (0.19 m^2) area located at a corner of the specimen.

R4403.16.3.5.1 For window and skylight assemblies, all impacts shall be to glass or other glazing infill. For test specimens with more than one light of glass, a single light closest to the center of the assembly shall be selected and impacted in accordance with Section R4403.16.3.5. If a light of glass is sufficiently small to cause the 5 inch (127 mm) radius circles to overlap, separate lights may be impacted; however, there must be a total of 30 impacts within the assembly.

R4403.16.3.5.1.1 For window, fixed glass and skylight assemblies comprised of glass with different thickness, types of glass or different types of glazing infill, each separate thickness or type shall be impacted in accordance with Section R4403.16.3.5.

R4403.16.3.5.2 For doors, wall cladding and external protection devices, all impacts shall be to the thinnest section through the assembly. For doors, wall cladding and external protection devices with horizontal and/or vertical bracing, all impacts shall be within a single area that is not reinforced and shall be impacted in accordance with Section R4403.16.3.5.

R4403.16.3.5.2.1 For doors with glass, the glass shall be impacted in accordance with Section R4403.16.3.5 and the thinnest section through the assembly that is not glass shall be impacted in accordance with Section R4403.16.3.5.

R4403.16.3.6 In the case of glazing, after completion of the small missile impacts, each test specimen shall then be subjected to the cyclic pressure loading defined in Table R4403.16.

R4403.16.3.6.1 If external protection devices are employed to protect windows, doors or skylights, they must resist the small missile impacts specified in Sections R4403.16.3.3 and R4403.16.3.4 without deformations that result in contact with the windows, glass, doors or skylights they are intended to protect.

R4403.16.3.6.2 If external protection devices are not designed to be air tight, following the small missile impact test, they must resist an application of force corresponding to those listed in Table R4403.15.4 (fatigue load testing) without detaching from their mountings. The acting pressure cycles shall be simulated with loads applied through a mechanical system attached to the shutter specimen to apply uniformly around the shutter perimeter a force equal to the product of the required pressure and the area of the shutter specimen.

R4403.16.3.7 If air leakage through the test specimen is excessive, tape may be used to cover any cracks and joints through which leakage is occurring. Tape shall not be used when there is a probability that it may significantly

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~~restrict differential movement between adjoining members. It is also permissible to cover both sides of the entire specimen and mounting panel with a single thickness of polyethylene film no thicker than 0.050 mm (2 mils). The technique of application is important for the full load to be transferred to the specimen and to ensure the membrane does not prevent movement or failure of the specimen. Apply the film loosely with extra folds of material at each corner and at all offsets and recesses. When the load is applied, there shall be no fillet caused by tightness of plastic film.~~

~~**R4403.16.3.8** A particular system of construction shall be deemed to comply with this test if three test specimens reject the small missile impacts without penetration and resist the cyclic pressure loading with no crack forming longer than 5 inches (127 mm) and 1/16 inch (1.6 mm) in width through which air can pass.~~

~~**R4403.16.3.9** If only one of the three test specimens in a test fails to meet the above listed criteria, one retest of the system (another test sequence with three specimens) of construction shall be permitted.~~

~~**R4403.16.4 Construction assemblies deemed to comply with R4403.16.**~~

~~1. Exterior concrete masonry walls of minimum nominal 8 inch (203 mm) thickness, constructed in accordance with Section R4407 of this code.~~

~~2. Exterior frame walls or gable ends constructed in accordance with Section R4408 and Section R4409 of this code, sheathed with a minimum 19/32 inch (15 mm) CD exposure 1 plywood and clad with wire lath and stucco installed in accordance with Section R4411 of this code.~~

~~3. Exterior frame walls and roofs constructed in accordance with Section R4408 of this code sheathed with a minimum 24 gauge rib deck type material and clad with an approved wall finish.~~

~~4. Exterior reinforced concrete elements constructed of solid normal weight concrete (no voids), designed in accordance with Section R4405 of this code and having a minimum 2 inches (51 mm) thickness.~~

~~5. Roof systems constructed in accordance with Section R4408 or Section R4409 of this code, sheathed with a minimum 19/32 inch (15 mm) CD exposure 1 plywood or minimum nominal 1 inch (25 mm) wood decking and surfaced with an approved roof system installed in accordance with Section R4402 of this code.~~

~~All connectors shall be specified by the building designer of record for all loads except impact.~~

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TABLE R4403.16
CYCLIC WIND PRESSURE LOADING

INWARD ACTING PRESSURE		OUTWARD ACTING PRESSURE	
RANGE	NUMBER OF CYCLES1	RANGE	NUMBER OF CYCLES1
0.2 PMAXto 0.5 PMAX2	3,500	0.3 PMAXto 1.0 PMAX2	50
0.0 PMAXto 0.6 PMAX2	300	0.5 PMAXto 0.8 PMAX2	1,050
0.5 PMAXto 0.8 PMAX2	600	0.0 PMAXto 0.6 PMAX2	50
0.3 PMAXto 1.0 PMAX2	100	0.2 PMAXto 0.5 PMAX2	3,350

Notes:

1. Each cycle shall have minimum duration of 1 second and a maximum duration of 3 seconds and must be performed in a continuous manner 1.

2. P_{MAX} = 0.6 x ultimate design load in accordance with ASCE 7. The pressure spectrum shall be applied to each test specimen beginning with inward acting pressures followed by the outward acting pressures in the order from the top of each column to the bottom of each column.

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SECTION R4403
HIGH-VELOCITY HURRICANE ZONES—GENERAL

R4403.1 ~~General design requirements~~ Refer to Chapter 16 of the Floirda Building Code, Building.

~~**R4403.1.1** Any system, method of design or method of construction shall admit of a rational analysis in accordance with well established principles of mechanics and sound engineering practices.~~

~~**R4403.1.2** Buildings, structures and all parts thereof shall be designed and constructed to be of sufficient strength to support the estimated or actual imposed dead, live, wind, and any other loads, both during construction and after completion of the structure, without exceeding the allowable materials stresses specified by this code.~~

~~**R4403.1.6** Floor and roof systems shall be designed and constructed to transfer horizontal forces to such parts of the structural frame as are designed to carry these forces to the foundation. Where roofs or floors are constructed of individual prefabricated units and the transfer of forces to the building frame and foundation is totally or partially dependent on such units, the units and their attachments shall be capable of resisting applied loads in both vertical and both horizontal directions. Where roofs or floors are constructed of individual prefabricated units and the transfer of forces to the building frame and foundation is wholly independent of such units, the units and their attachments shall be capable of resisting applied loads normal to the surface, in and out.~~

~~**R4403.2 General design for specific occupancies and structures.**~~

~~**R4403.2.1 Fences.** Fences not exceeding 6 feet (183 cm) in height from grade may be designed for 75 mph (33 m/s) fastest mile wind speed or V_{asd} as determined in accordance with Section R301.2.1.3 of 90 mph (40 m/s).~~

~~**R4403.2.1.1 Wood fences.** Wood fence design shall be as specified by Section R4409.15.~~

~~SECTION R4403.2~~
~~HIGH-VELOCITY HURRICANE ZONES—~~
~~DEFLECTION~~

~~**R4403.2.1 Allowable deflections.** The deflection of any structural member or component when subjected to live, wind and other superimposed loads set forth herein shall not exceed the following:~~

~~1.~~	~~Roof and ceiling or components supporting plaster . . . . . .~~	~~L/360~~
~~2.~~	~~Roof members or components not supporting plaster under . . . . . .~~	~~L/240~~
~~3.~~	~~Floor members or components . . . . . .~~	~~L/360~~
~~4.~~	~~Vertical members and wall members or components consisting of or supporting material that hardens in place, is brittle or lacks resistance to cracking caused by bending strains. . . . . .~~	~~L/360~~
~~5.~~	~~Vertical members and wall members or components not required to meet the conditions of Section R4403.2.1, Item 4. . . . . .~~	~~L/180~~
~~6.~~	~~Roof and vertical members, wall members and panels of carports, canopies, marquees, patio covers, utility sheds and similar minor structures not to be considered living areas, where the roof projection is greater than 12 feet (3658 mm) in the direction of the span, for free-standing roofs and roofs supported by existing structures. Existing structures supporting such roofs shall be capable of supporting the additional loading. . . . . .~~	~~L/180~~
~~7.~~	~~For Group R3 occupancies only, roof and vertical members, wall members and panels of carports, canopies, marquees, patio covers, utility sheds and similar minor structures not to be considered living areas, where the roof projection is 12 feet (3638 mm) or less in the direction of the span and for free standing roofs and roofs supported by existing structures. . . . . .~~	~~L/80~~
~~8.~~	~~Members supporting screens only. . . . . .~~	~~L/80~~
~~9.~~	~~Storm shutters and fold-down awnings, which in the closed position shall provide a minimum clear separation from the glass of 1 inch (25 mm) but not to exceed 2 inches (51 mm) when the shutter or awning is at its maximum point of permissible deflection . . . . . .~~	~~L/30~~
~~10.~~	~~Roofs and exterior walls of utility sheds having maximum dimensions of 10 feet length, 10 feet width, and 7 feet height. . . . . .~~	~~L/80~~
~~11.~~	~~Roofs and exterior walls of storage buildings larger than utility sheds. . . . . .~~	~~L/180~~

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SECTION R4403.3
HIGH-VELOCITY HURRICANE ZONES — VOLUME CHANGES

R4403.3.1 Volume change. In the design of any building, structure or portion thereof, consideration shall be given to the relief of stresses caused by expansion, contraction and other volume changes.

SECTION R4403.6
HIGH-VELOCITY HURRICANE ZONES — ROOF DRAINAGE

R4403.6.1 Roof drainage. Where parapets or curbs are constructed above the level of the roof, provision shall be made to prevent rain water from accumulating on the roof in excess of that considered in the design, in the event the rain water drains, conductors or leaders become clogged.

R4403.6.2 Where roofs are not designed in accordance with Section R4403.6.1, overflow drains or scuppers shall be placed to prevent an accumulation of more than 5 inches (927 mm) of water on any portion of the roof. In determining the load that could result should the primary drainage system be blocked, the loads caused by the depth of water (i.e., head) needed to cause the water to flow out the scuppers or secondary drainage system shall be included.

R4403.6.3 Drains or scuppers installed to provide overflow drainage shall be not less in aggregate area than as shown in Figure R4403.6.3, but not less than 4 inches (102 mm) dimension in any direction and shall be placed in parapets not less than 2 inches (51 mm) nor more than 4 inches (102 mm) above the low point of the finished roofing surface and shall be located as close as practical to required vertical leaders, conductors or downspouts. The roof area to be taken in the sizing of the scuppers is the horizontal projection, except that, where a building wall extends above the roof in such a manner as to drain into the area considered, the one-half of the area of the vertical wall shall be added to the horizontal projection.

R4403.6.4 All roofs shall be designed with sufficient slope or camber to assure adequate drainage after the long-term deflection from dead load, or shall be designed to support maximum loads including possible ponding of water caused by deflection.

FIGURE R4403.6.3
REQUIRED AREA OF OVERFLOW SCUPPERS

R4403.6.5 Ponding loads. Roofs shall be designed to preclude instability from ponding loads.

R4403.6.6 Each portion of a roof shall be designed to sustain the loads of all rainwater that could accumulate on it if the primary drainage system for that portion is obstructed. Ponding

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~~instability shall be considered in this situation. If the overflow drainage provisions contain drain lines, such lines shall be independent of any primary drain lines.~~

~~SECTION R4403.7~~
~~HIGH-VELOCITY HURRICANE ZONES — SPECIAL LOAD CONSIDERATIONS~~

~~**R4403.7.3.6 Railing.**~~

~~**R4403.7.3.6.3** Laminated glazing will be permitted as an equal alternate to pickets, if tested by an accredited laboratory to satisfy the resistance requirements of this code for wind, live and kinetic energy impact loading conditions. The kinetic energy impact loading shall comply with ANSI Z97.1-1984 using a 400 foot-pound (542 N-m) energy impact. The safety requirements of the impact test shall be judged to have been satisfactorily met if breakage does not occur or numerous cracks and fissures occur but no shear or opening through which a 3-inches (76 mm) diameter sphere may freely pass. The glass panel shall remain within the supporting frame.~~

~~**R4403.7.3.6.4** If the posts that support the top rail of exterior railings are substituted with glass, the assembly shall be tested to TAS 201, where the impacted glass continues to support the top rail and all applicable loads after impact.~~

~~**R4403.7.8 Load combination.** The safety of structures shall be checked using the provisions of 2.3 and 2.4 of ASCE 7 with commentary. Flood Load Fa mentioned in these load combinations shall be in accordance with Chapter 5 of ASCE 7.~~

~~**Exception:** Increases in allowable stress shall be permitted in accordance with TMS 402/ACI 530/ASCE 5 provided the load reduction factor of 0.75 of combinations 4 and 6 of ASCE 7 Section 2.4.1 shall not be applied.~~

~~SECTION R4403.9~~
~~HIGH-VELOCITY HURRICANE ZONES — WIND LOADS~~

~~**R4403.9.1** Buildings and structures, and every portion thereof, shall be designed and constructed to meet the requirements of Chapters 26 through 31 of ASCE 7.~~

~~**R4403.9.2** Wind velocity (3 second gust) used in structural calculations shall be 170 miles per hour (76 m/s) in Broward County and 175 miles per hour (79 m/s) in Miami-Dade County.~~

~~**R4403.9.3** All buildings and structures shall be considered to be in Exposure Category C, unless Exposure Category D applies, as defined in Section 26.6 of ASCE 7.~~

~~**R4403.9.4** For wind force calculations, roof live loads shall not be considered to act simultaneously with the wind load.~~

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R4403.9.5 *Utility sheds shall be designed for a wind load of not less than 15 pounds per square foot (718 Pa).*

R4403.9.6 *The lateral force on* rooftop structures and equipment with A_t less than (0.1Bh) located on buildings of all heights shall be determined from Eq. 29.5-1 of ASCE 7-10 in which the value of GC_r is 3.1. GC_r shall be permitted to be reduced linearly from 3.1 to 1.1 as the value of A_t is increased from (0.1Bh) to (Bh). The value of G from Section 26.9 of ASCE 7 shall not be used. Additionally, a simultaneous uplift force shall be applied, given by Eq. 29.5-1 of ASCE 7 in which GC_r = 1.5 and A_t is replaced by the horizontal projected area, A_t, of the rooftop structure or equipment. For the uplift force GC_r shall be permitted to be reduced linearly from 1.5 to 1.0 as the value of A_t is increased from (0.1BL) to (BL).

SECTION R4403.10
HIGH VELOCITY HURRICANE ZONES — OVERTURNING MOMENT AND UPLIFT

R4403.10.1 Computations for overturning moment and uplift shall be based on ASCE 7.

R4403.10.2 Overturning and uplift stability of any building, structure or part thereof taken as a whole shall be provided, and be satisfied by conforming to the load combination requirements of ASCE 7.

SECTION R4403.11
HIGH-VELOCITY HURRICANE ZONES — SUNROOMS

R4403.11.1 Wind Loads. Basic wind speed in miles per hour (mph) shall be determined in accordance with Section R4403.9.2. Sunrooms including exposed structures, components, cladding, and roof covering shall be designed to resist the wind loads as established in Section R4403.9.

R4403.11.2 Sunroom Categories. For the purpose of applying the criteria of the AAMA Standard for sunrooms based on the intended use, sunrooms shall be categorized in one of the following categories by the permit applicant, design professional, or the property owner where the sunroom is being constructed.

Category I: A roof or a covering of an outdoor space. The openings shall be permitted to be enclosed with insect screening or 0.5 mm (20 mil) maximum thickness plastic film. The space is defined as non-habitable and unconditioned.

Category II: A roof or a covering of an outdoor space with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The space is defined as non-habitable and unconditioned.

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Category III: A roof or a covering of an outdoor space with enclosed walls. The openings are permitted to be enclosed with translucent or transparent plastic or glass. The sunroom complies with additional requirements for forced-entry resistance, air-leakage resistance and water-penetration resistance. The space is defined as non-habitable and unconditioned.

Category IV: A roof or a covering of an outdoor space with enclosed walls. The sunroom is designed to be heated and/or cooled by a separate temperature control or system and is thermally isolated from the primary structure. The sunroom complies with additional requirements for forced-entry resistance, water penetration resistance, air-leakage resistance, and thermal performance. The space is defined as habitable and conditioned.

Category V: A roof or a covering of an outdoor space with enclosed walls. The sunroom is designed to be heated and/or cooled and is open to the main structure. The sunroom complies with additional requirements for forced-entry resistance, water-penetration resistance, air-leakage resistance, and thermal performance. The space is defines as habitable and conditioned.

SECTION R4403.12
HIGH-VELOCITY HURRICANE ZONES — SCREEN ENCLOSURES

R4403.12.1 Screen enclosures.

R4403.12.1.1 The wind loads on screen surfaces shall be per ASCE 7 Figure 29.5-2 based on the ratio of solid to gross area.

R4403.12.1.2 Design shall be based on such loads applied horizontally inward and outward to the walls with a shape factor of 1.3 and applied vertically upward and downward on the roof with a shape factor of 0.7.

Exception: Screen enclosures shall be permitted to be designed in accordance with the AAF Guide to Aluminum Construction in High Wind Areas. Construction documents based on the AAF Guide to Aluminum Construction in High Wind Areas shall be prepared and signed and sealed by a Florida licensed architect or engineer.

R4403.12.2 Windbreakers.

R4403.12.2.1 Vinyl and acrylic glazed panels shall be removable. Removable panels shall be identified as removable by a decal. The identification decal shall essentially state "Removable panel SHALL be removed when wind speeds exceed 75 mph (34 m/s)." Decals shall be placed such that the decal is visible when the panel is installed.

R4403.12.2.2 Permanent frame shall be designed per Sections R4403.9 and R4403.12.1.2.

SECTION R4403.13
HIGH-VELOCITY HURRICANE ZONES —

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FLOOD RESISTANCE

R4403.13.1.1 Flood resistance. Where the building or structure is located in a flood hazard areas established in Table 301.2(1), the building or structure, including enclosures below elevated buildings, shall be designed and constructed in accordance with Section R322 and this section.

SECTION R4403.15
HIGH-VELOCITY HURRICANE ZONES—
LOAD TESTS

R4403.15.1 Application. Whenever there is insufficient evidence of compliance with the provisions of this code or evidence that any material or any construction does not conform to the requirements of this code, or in order to substantiate claims for alternate materials or methods of construction, the building official may require testing by an approved agency, at the expense of the owner or his agent, as proof of his compliance. Testing methods shall be as specified by this code for the specific material.

R4403.15.2 Testing method. Such testing shall follow a nationally recognized standard test, or when there is no standard test procedure for the material or assembly in question, the building official shall require that the material or assembly under dead plus live load shall deflect not more than as set forth in Section R4403.2, and that the material or assembly shall sustain dead load plus twice the live load for a period of 24 hours, with a recovery of at least 80 percent or a 100 percent recovery after one-half test load.

R4403.15.3 Alternate test methods. When elements, assemblies or details of structural members are such that their load-carrying capacity, deformation under load, or deflection cannot be calculated by rational analysis, their structural performance shall be established by test in accordance with test procedures as approved by the building official based on consideration of all probable conditions of loading.

R4403.15.4 Fatigue load testing. Where cladding assemblies (including cladding and connections) or roofing framing assemblies (including portions of roof structure and connections) are such that their load-carrying capacity or deformation under load cannot be calculated by rational analysis, the assemblies may be tested to resist the fatigue loading sequence given by Table R4403.15.4

TABLE R4403.15.4
FATIGUE LOADING SEQUENCE

RANGE OF TEST	NUMBER OF CYCLES[1]
0 to 0.5p_{max}[2]	600
0 to 0.6$_{max}$[2]	70
0 to 1.3p_{max}[2]	1

1. Each cycle shall have minimum duration of 1 second and a maximum duration of 3 seconds and must be performed in a continuous manner.
2. P_{max} = 0.6 x ultimate design load in accordance with ASCE 7.

Assemblies shall be tested with no resultant failure or distress and shall have a recovery of at least 90 percent over maximum deflection.

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Any cladding assembly not incorporated into the *Florida Building Code, Building* after successfully completing the impact test outlined in Section R4403.16, shall be subject to fatigue loading testing and shall obtain Product Approval by the building official.

SECTION R4403.16
HIGH-VELOCITY HURRICANE ZONES—IMPACT TESTS FOR WIND-BORNE DEBRIS

R4403.16.1 All parts or systems of a building or structure envelope such as, but not limited, to exterior walls, roof, outside doors, skylights, glazing and glass block shall meet impact test criteria or be protected with an external protection device that meets the impact test criteria. Test procedures to determine resistance to wind-borne debris of wall cladding, outside doors, skylights, glazing, glass block, shutters and any other external protection devices shall be performed in accordance with this section.

Exception: The following structures or portion of structures shall not be required to meet the provisions of this section:

a. Roof assemblies for screen rooms, porches, canopies, etc., attached to a building that do not breach the exterior wall or building envelope and have no enclosed sides other than screen.
b. Soffits, soffit vents and ridge vents. Size and location of such vents shall be detailed by the designer and shall not compromise the integrity of the diaphragm boundary.
c. Vents in a garage with four or fewer cars. Size and location of such vents shall be detailed by the designer and shall not exceed the minimum required area by more than 25 percent.
d. Exterior wall or roof openings for wall or roof mounted HVAC equipment.
e. Openings for roof-mounted personnel access roof hatches.
f. Storage sheds that are not designed for human habitation and that have a floor area of 720 square feet (67 m^2) or less are not required to comply with the mandatory windborne debris impact standards of this code.
g. Louvers as long as they properly considered ASCE 7 in the design of the building.
h. Buildings and structures for marinas, cabanas, swimming pools and greenhouses.

R4403.16.2 Large missile impact tests.

R4403.16.2.1 This test shall be conducted on three test specimens. This test shall be applicable to the construction units, assemblies and materials to be used up to and including 30 feet (9.1 m) in height in any and all structures.

R4403.16.2.2 The test specimens shall consist of the entire assembled unit, including frame and anchorage as supplied by the manufacturer for installation in the building, or as set forth in a referenced specification, if applicable. Fasteners used in mounting the test specimen shall be identical in size and spacing to what is used in field installations.

R4403.16.2.3 The large missile shall be comprised of a piece of timber having nominal dimensions of 2 inches by 4 inches (51 mm by 102 mm) weighing 9 pounds (4.1 kg).

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R4403.16.2.4 The large missile shall impact the surface of each test specimen at a speed of 50 feet per second (15.2 m/s).

R4403.16.2.5 Each test specimen shall receive two impacts except as noted in Sections R4403.16.2.5.1 and R4403.16.2.5.2, the first within a 5-inch (127 mm) radius circle having its center on the midpoint of the test specimen and the second within a 5 inch (127 mm) radius circle in a corner having its center in a location 6 inches (152 mm) away from any supporting members.

R4403.16.2.5.1 For window, glass block, fixed glass and skylight assemblies, both impacts shall be to glass or other glazing infill. For test specimens with more than one light of glass, a single light closest to the center of the assembly shall be selected and impacted twice in accordance with Section R4403.16.2.5. If a light of glass is sufficiently small to cause the 5-inch (127 mm) radius circle to overlap, two separate lights shall be impacted one time each.

R4403.16.2.5.1.1 For window, fixed glass and skylight assemblies comprised of different glass thickness, types of glass or different types of glazing infill, each separate thickness or type shall be impacted twice in accordance with Section R4403.16.2.5.

R4403.16.2.5.2 For doors, wall cladding and external protection devices, both impacts shall be to the thinnest section through the assembly. For doors, wall cladding and external protection devices with horizontal and/or vertical bracing, both impacts shall be within a single area that is not reinforced and shall be in accordance with Section R4403.16.2.5.

R4403.16.2.5.2.1 For doors with glass, the glass shall be impacted twice and the thinnest section through the assembly that is not glass shall be impacted twice in accordance with Section R4403.16.2.5.

R4403.16.2.6 In the case of glazing, if the three test specimens that comprise a test successfully reject the two missile impacts, they shall then be subjected to the cyclic pressure loading defined in Table R4403.16.

R4403.16.2.6.1 If external protection devices are employed to protect windows, fixed doors or skylights, they must resist the large missile impacts specified in Sections R4403.16.2.3 and R4403.16.2.4 without deformations which result in contact with the windows, fixed glass, glass block and doors or skylights they are intended to protect.

R4403.16.2.6.2 If external protection devices are not designed to be air tight, following the large missile impact test, they must resist an application of force corresponding to those listed in Table R4403.15.4 (fatigue load testing) without detaching from their mountings. The acting pressure cycles shall be simulated with loads applied through a mechanical system attached to the shutter specimen to apply uniformly around the shutter perimeter a force equal to the product of the required pressure and the area of the shutter specimen.

R4403.16.2.7 If air leakage through the test specimen is excessive, tape may be used to cover any cracks and joints through which leakage is occurring. Tape shall not be used when there is a probability that it may significantly restrict differential movement between adjoining members. It is also permissible to cover both sides of the entire specimen and

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mounting panel with a single thickness of polyethylene film no thicker than 0.050 mm (2 mils). The technique of application is important in order that the full load is transferred to the specimen and that the membrane does not prevent movement or failure of the specimen. Apply the film loosely with extra folds of material at each corner and at all offsets and recesses. When the load is applied, there shall be no fillet caused by tightness of plastic film.

R4403.16.2.8 A particular system of construction shall be deemed to comply with this recommended practice if three test specimens reject the two missile impacts without penetration and resist the cyclic pressure loading with no crack forming longer than 5 inches (127 mm) and 1/16 inch (1.6 mm) wide through which air can pass.

R4403.16.2.9 If only one of the three test specimens in a test fails to meet the above listed criteria, one retest of this system of construction (another test sequence with three specimens) shall be permitted.

R4403.16.3 Small missile impact test.

R4403.16.3.1 This test shall be conducted on three test specimens. This test shall be applicable to the construction units, assemblies, and materials to be used above 30 feet (9.1 m) in height in any and all structures.

R4403.16.3.2 Each test specimen shall consist of the entire assembled unit, including frame and anchorage as supplied by the manufacturer for installation in the building, or as set forth in a referenced specification, if applicable. The fasteners used in mounting the test specimen shall be identical in size and spacing to those to be used in field installations.

R4403.16.3.3 The missiles shall consist of solid steel balls each having a mass of 2 grams (0.07 oz) (+/-5 percent) with a 5/16-inch (7.9 mm) nominal diameter.

R4403.16.3.4 Each missile shall impact the surface of each test specimen at a speed of 130 feet per second (40 m/s).

R440.16.3.5 Each test specimen shall receive 30 small missile impacts except as noted in Sections R4403.16.3.5.1 and Section R4403.16.3.5.2 delivered in groups of 10 at a time: the first 10 distributed uniformly over a 2-square-foot (0.19 m^2) area located at the center of the test specimen, the second 10 distributed uniformly over a 2-square-foot (0.19 m^2) area located at the center of the long dimension of the specimen near the edge, and the third 10 distributed uniformly over a 2-square-foot (0.19 m^2) area located at a corner of the specimen.

R4403.16.3.5.1 For window and skylight assemblies, all impacts shall be to glass or other glazing infill. For test specimens with more than one light of glass, a single light closest to the center of the assembly shall be selected and impacted in accordance with Section R4403.16.3.5. If a light of glass is sufficiently small to cause the 5-inch (127 mm) radius circles to overlap, separate lights may be impacted; however, there must be a total of 30 impacts within the assembly.

R4403.16.3.5.1.1 For window, fixed glass and skylight assemblies comprised of glass with different thickness, types of glass or different types of glazing infill,

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each separate thickness or type shall be impacted in accordance with Section R4403.16.3.5.

R4403.16.3.5.2 For doors, wall cladding and external protection devices, all impacts shall be to the thinnest section through the assembly. For doors, wall cladding and external protection devices with horizontal and/or vertical bracing, all impacts shall be within a single area that is not reinforced and shall be impacted in accordance with Section R4403.16.3.5.

R4403.16.3.5.2.1 For doors with glass, the glass shall be impacted in accordance with Section R4403.16.3.5 and the thinnest section through the assembly that is not glass shall be impacted in accordance with Section R4403.16.3.5.

R4403.16.3.6 In the case of glazing, after completion of the small missile impacts, each test specimen shall then be subjected to the cyclic pressure loading defined in Table R4403.16.

R4403.16.3.6.1 If external protection devices are employed to protect windows, doors or skylights, they must resist the small missile impacts specified in Sections R4403.16.3.3 and R4403.16.3.4 without deformations that result in contact with the windows, glass, doors or skylights they are intended to protect.

R4403.16.3.6.2 If external protection devices are not designed to be air tight, following the small missile impact test, they must resist an application of force corresponding to those listed in Table R4403.15.4 (fatigue load testing) without detaching from their mountings. The acting pressure cycles shall be simulated with loads applied through a mechanical system attached to the shutter specimen to apply uniformly around the shutter perimeter a force equal to the product of the required pressure and the area of the shutter specimen.

R4403.16.3.7 If air leakage through the test specimen is excessive, tape may be used to cover any cracks and joints through which leakage is occurring. Tape shall not be used when there is a probability that it may significantly restrict differential movement between adjoining members. It is also permissible to cover both sides of the entire specimen and mounting panel with a single thickness of polyethylene film no thicker than 0.050 mm (2 mils). The technique of application is important for the full load to be transferred to the specimen and to ensure the membrane does not prevent movement or failure of the specimen. Apply the film loosely with extra folds of material at each corner and at all offsets and recesses. When the load is applied, there shall be no fillet caused by tightness of plastic film.

R4403.16.3.8 A particular system of construction shall be deemed to comply with this test if three test specimens reject the small missile impacts without penetration and resist the cyclic pressure loading with no crack forming longer than 5 inches (127 mm) and 1/16 inch (1.6 mm) in width through which air can pass.

R4403.16.3.9 If only one of the three test specimens in a test fails to meet the above listed criteria, one retest of the system (another test sequence with three specimens) of construction shall be permitted.

R4403.16.4 Construction assemblies deemed to comply with R4403.16.

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1. Exterior concrete masonry walls of minimum nominal 8 inch (203 mm) thickness, constructed in accordance with Section R4407 of this code.

2. Exterior frame walls or gable ends constructed in accordance with Section R4408 and Section R4409 of this code, sheathed with a minimum 19/32 inch (15 mm) CD exposure 1 plywood and clad with wire lath and stucco installed in accordance with Section R4411 of this code.

3. Exterior frame walls and roofs constructed in accordance with Section R4408 of this code sheathed with a minimum 24-gauge rib deck type material and clad with an approved wall finish.

4. Exterior reinforced concrete elements constructed of solid normal weight concrete (no voids), designed in accordance with Section R4405 of this code and having a minimum 2 inches (51 mm) thickness.

5. Roof systems constructed in accordance with Section R4408 or Section R4409 of this code, sheathed with a minimum 19/32-inch (15 mm) CD exposure 1 plywood or minimum nominal 1-inch (25 mm) wood decking and surfaced with an approved roof system installed in accordance with Section R4402 of this code.

All connectors shall be specified by the building designer of record for all loads except impact.

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~~TABLE R4403.16~~
~~CYCLIC WIND PRESSURE LOADING~~

~~INWARD ACTING PRESSURE~~		~~OUTWARD ACTING PRESSURE~~	
~~RANGE~~	~~NUMBER OF CYCLES[1]~~	~~RANGE~~	~~NUMBER OF CYCLES[1]~~
~~0.2 P_{MAX} to 0.5 P_{MAX}[2]~~	~~3,500~~	~~0.3 P_{MAX} to 1.0 P_{MAX}[2]~~	~~50~~
~~0.0 P_{MAX} to 0.6 P_{MAX}[2]~~	~~300~~	~~0.5 P_{MAX} to 0.8 P_{MAX}[2]~~	~~1,050~~
~~0.5 P_{MAX} to 0.8 P_{MAX}[2]~~	~~600~~	~~0.0 P_{MAX} to 0.6 P_{MAX}[2]~~	~~50~~
~~0.3 P_{MAX} to 1.0 P_{MAX}[2]~~	~~100~~	~~0.2 P_{MAX} to 0.5 P_{MAX}[2]~~	~~3,350~~

~~Notes:~~

~~1. Each cycle shall have minimum duration of 1 second and a maximum duration of 3 seconds and must be performed in a continuous manner.~~

~~2. P_{MAX} = 0.6 x ultimate design load in accordance with ASCE 7. The pressure spectrum shall be applied to each test specimen beginning with inward acting pressures followed by the outward acting pressures in the order from the top of each column to the bottom of each column.~~

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S5011

Date Submitted	7/9/2012	**Section**	4404	**Proponent**	Michael Goolsby
Chapter	44	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Eliminating unnecessary duplication of Chapter 44 HVHZ provisions

Rationale

Since the inception of the FBC, the content of Chapter 44 of the FBC, R has been a duplication of the sections contained in the FBC, Building volume. This proposed modification is intended to maintain the continuation of the current level of safety for the protection of life and property unchanged. Importantly, the proposed modification eliminates the need to unnecessarily duplicate more than one-hundred pages into the FBC, R volume, thereby reducing the size of the text contained in the FBC. Additionally, the proposed modification prevents the need to replace all of the non-wind related sections which were removed by legislative directive with dozens of individual modifications, each requiring review and approval; this process would otherwise be unavoidable in order to create a crucial integration of applicable and relevant building code sections into Chapter 44 requirements. In short, this proposed modification is a simplified approach resulting in identical code requirements but through a less time consuming, less complicated and less duplicative process.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to building and property owners relative to cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

It does so by ensuring direction to applicable sections of the code are provided.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

It does so by eliminating the need to unnecessarily duplicate building code provisions and affects a reduction in the number of code pages to be compiled, reviewed, edited and printed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification does not curtail the use of any material, products, methods or systems of construction already deemed acceptable by the Florida Building Code or any alternate materials, design and methods of construction and equipment acceptable to the code official.

Does not degrade the effectiveness of the code

This modification does not degrade the effectiveness of the code; instead, it maintains the applicability of relevant base code requirements as has been the case since the first edition of the Florida Building Code.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5011-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

Creates a reference to Chapter 18 of the FBC-B. The FBC-R was created to be a free standing document and as such should include the language if it meets the criteria for a Florida specific amendment.

S5011 Text Modification

Page: 1

SECTION R4404

HIGH-VELOCITY HURRICANE ZONES — FOUNDATIONS AND RETAINING WALLS

R4404.1 Refer to Chapter 18 of the Florida Building Code, Building.

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Date Submitted	7/9/2012	**Section**	4405	**Proponent**	Michael Goolsby
Chapter	44	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Eliminating unnecessary duplication of Chapter 44 HVHZ provisions

Rationale

Since the inception of the FBC, the content of Chapter 44 of the FBC, R has been a duplication of the sections contained in the FBC, Building volume. This proposed modification is intended to maintain the continuation of the current level of safety for the protection of life and property unchanged. Importantly, the proposed modification eliminates the need to unnecessarily duplicate more than one-hundred pages into the FBC, R volume, thereby reducing the size of the text contained in the FBC. Additionally, the proposed modification prevents the need to replace all of the non-wind related sections which were removed by legislative directive with dozens of individual modifications, each requiring review and approval; this process would otherwise be unavoidable in order to create a crucial integration of applicable and relevant building code sections into Chapter 44 requirements. In short, this proposed modification is a simplified approach resulting in identical code requirements but through a less time consuming, less complicated and less duplicative process.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to building and property owners relative to cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

It does so by ensuring direction to applicable sections of the code are provided.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

It does so by eliminating the need to unnecessarily duplicate building code provisions and affects a reduction in the number of code pages to be compiled, reviewed, edited and printed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification does not curtail the use of any material, products, methods or systems of construction already deemed acceptable by the Florida Building Code or any alternate materials, design and methods of construction and equipment acceptable to the code official.

Does not degrade the effectiveness of the code

This modification does not degrade the effectiveness of the code; instead, it maintains the applicability of relevant base code requirements as has been the case since the first edition of the Florida Building Code.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5012-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

Creates a reference to Chapter 19 of the FBC-B. The FBC-R was created to be a free standing document and as such should include the language if it meets the criteria for a Florida specific amendment.

S5012 Text Modification

Page: 1

SECTION R4405

HIGH-VELOCITY HURRICANE ZONES —

CONCRETE

R4405.1 ~~General~~ Refer to Chapter 19 of the Florida Building Code, Building.

~~**R4405.1.1 Scope.** This section prescribes requirements for reinforced concrete in construction regulated by this code.~~

~~**R4405.1.2 Application.** Reinforced concrete shall be of the materials, proportions strength and consistency as set forth in this section and shall be designed by methods admitting of rational analysis according to established principles of mechanics.~~

~~**R4405.1.3 Requirements.** All structures of reinforced concrete, including prestressed concrete, shall be designed and constructed in accordance with the provisions of ACI 318 as adopted herein.~~

~~**R4405.1.4 Workmanship.** Concrete construction shall be in conformance with the tolerance, quality and methods of construction set forth in Section R4405.2.~~

~~**SECTION R4405.2**~~
~~**HIGH-VELOCITY HURRICANE ZONES —**~~

~~**STANDARDS**~~

~~**R4405.2.1** The following Standards are hereby adopted as part of this code as set forth in Chapter 43 of this code.~~

~~**R4405.2.2 American Concrete Institute (ACI).**~~

~~1. Standard Tolerances for Concrete Construction and Materials, ACI 117.~~

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~~2. Specifications for Structural Concrete for Buildings, ACI 301.~~

~~3. Manual of Standard Practice for Detailing Reinforced Concrete Structures, ACI 315.~~

~~4. Building Code Requirements for Reinforced Concrete, ACI 318.~~

~~5. Recommended Practice for Concrete Formwork, ACI 347.~~

~~6. Recommended Practice for Shotcreting, ACI 506.~~

~~7. Specification for Materials, Proportioning, and Application of Shotcrete, ACI 506.2.~~

~~8. Deformed and Plain Billet Steel Bars for Concrete Reinforcement, ASTM A615, including S1.~~

~~R4405.2.3 American National Standards Institute (ANSI)/American Society of Civil Engineers (ASCE).~~

~~1. Specifications for the Design and Construction of Composite Slabs and Commentary on Specifications for the Design and Construction of Composite Slabs, ANSI/ASCE 3.~~

~~2. Guideline for Structural Assessment of Existing Buildings, ANSI/ASCE 11.~~

~~R4405.2.4 American Society for Testing Materials (ASTM).~~

~~1. Deformed and Plain Billet Steel Bars for Concrete Reinforcement, ASTM A 615, including S1.~~

~~2. Testing Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation, ASTM C 1077.~~

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SECTION R4405.3
HIGH-VELOCITY HURRICANE ZONES

DEFINITIONS

R4405.3.1 The following definitions apply to the provisions of Sections 4405.1 through 4405.11.

PLAIN CONCRETE. Concrete that is either unreinforced or contains less reinforcement than the minimum amount specified for reinforced concrete.

REINFORCED CONCRETE. Concrete reinforced with no less than the minimum amount required by ACI 318, prestressed or non-prestressed, and designed on the assumption that the two materials act together in resisting forces.

PRESTRESSED CONCRETE. Reinforced concrete in which internal stresses have been introduced to reduce potential tensile stresses in concrete resulting from loads. The term prestressed concrete refers to pretensioned concrete in which the reinforcing is tensioned before hardening of the concrete, to postensioned concrete in which the reinforcing is tensioned after hardening of the concrete, or combinations of both pretensioning and posttensioning.

PRECAST CONCRETE. Plain or reinforced concrete elements cast elsewhere than their final position in a structure.

SHOTCRETE. Mortar or concrete pneumatically projected at high velocity onto a surface.

SECTION R4405.4
HIGH-VELOCITY HURRICANE ZONES

MATERIALS

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R4405.4.1 Cements. Cements shall conform to one of the following specifications for Portland cement as set forth in Chapter 43.

1. **Portland Cement**, ASTM C 150

2. **Blended Hydraulic Cement**s, ASTM C 595, excluding Types S and SA, which are not intended as principal cementing constituents of structural concrete.

R4405.4.2 Aggregates for concrete shall conform to one of the following specifications as set forth in Chapter 43 of this code or Paragraph R4405.4.2.1.

1. **Concrete Aggregate**s, ASTM C33.

2. **Lightweight Aggregates for Structural Concrete**, ASTM C330.

R4405.4.2.1 Gradation of locally produced sand and crushed rock aggregate shall be as follows:

COARSE AGGREGATE	PERCENT PASSING
1 ½ inch sieve	100
1 inch sieve	95 – 100
½ inch sieve	25 – 60
#4 sieve	0 – 10
#8 sieve	0 – 5

FINE AGGREGATE	PERCENT PASSING
3/8 inch sieve	100
#4 sieve	90 – 100
#8 sieve	70 – 95
#16 sieve	50 – 85
#30 sieve	30 – 70
#50 sieve	10 – 45
#100 sieve	0 – 10

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~~**R4405.4.2.2** Aggregates failing to meet ASTM C 33, ASTM C 330 or the above special gradation but which have been shown by special test or actual service to produce concrete of adequate strength and durability may be used when certified by the engineer.~~

~~**R4405.4.2.3** Aggregates shall be quarried or washed in fresh water and shall contain not more than 1/20 of 1 percent salt by weight.~~

~~**R4405.4.3** Water used in mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials or other substances that may be deleterious to concrete or reinforcement.~~

~~**R4405.4.3.1** Mixing water for concrete, including that portion of mixing water contributed in the form of free moisture on aggregates, shall not contain deleterious amounts of chloride ion.~~

~~**R4405.4.4 Reinforcement.**~~

~~**R4405.4.4.1** Deformed reinforcement shall conform to one of the specifications as set forth in Chapter 43, except as provided in Section 3.5 of ACI 318.~~

~~**R4405.4.4.2** Prestressing tendons shall conform to one of the specifications as set forth in Chapter 43.~~

~~**Exception:** Wire strands and bars not specifically listed in ASTM A 421, A 416, or A 722 may be used provided they conform to minimum requirements of these specifications and do not have properties that make them less satisfactory than those listed in ASTM A 416, A 421 or A 722.~~

~~**R4405.4.4.3** Reinforcement consisting of structural steel, steel pipe or steel tubing may be used as specified in ACI 318.~~

~~**R4405.4.4.4** All welding of reinforcement shall conform to the Structural Welding Code - Reinforcing Steel , AWS D1.4, as set forth in Chapter 43.~~

~~**R4405.4.4.5** Reinforcement to be welded shall be indicated on the drawings, and welding procedures to be used shall be specified. ASTM steel specifications, except ASTM A 706, shall be supplemented to require a report of material properties necessary to conform to welding procedures specified in AWS D1.4.~~

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R4405.4.4.6 Deformed reinforcement may be galvanized or epoxy-coated in accordance with the Specifications for Zinc-Coated (galvanized) Bars for Concrete Reinforcement , ASTM A 767 or the Specification for Epoxy-Coated Bars , ASTM A 775. Zinc or epoxy-coated reinforcement shall conform to ASTM A 615, A 616 (S1), A 617 or A 706.

R4405.4.5 Admixtures.

R4405.4.5.1 Admixtures to be used in concrete shall conform to one of the specifications set forth in Chapter 43.

R4405.4.5.2 An admixture shall be shown capable of maintaining essentially the same composition and performance throughout the work as the product used in establishing concrete proportions.

R4405.4.5.3 Admixtures containing chloride ions shall not be used in concrete if their use will produce a deleterious concentration of chloride ion in the mixing water.

R4405.4.6 Test of materials.

R4405.4.6.1 The building official, or his authorized representative, shall have the right to order the test of any material entering into concrete or reinforced concrete to determine its suitability for the purpose; to order reasonable tests of the concrete from time to time to determine whether the materials and methods in use are such as to produce concrete of the necessary quality; and to order the test under load of any portion of a completed structure when conditions have been such as to leave doubt as to the adequacy of the structure to serve the purpose for which it is intended.

R4405.4.6.2 Materials and of concrete shall be tested in accordance with applicable standards of the ASTM International (ASTM) as listed in Chapter 43. Tests shall be made by an approved testing laboratory and results of such tests shall be submitted to the building official. Approved testing laboratories shall comply with ASTM C 1077.

R4405.4.6.2 Materials and of concrete shall be tested in accordance with applicable standards of the ASTM International (ASTM) as listed in Chapter 43. Tests shall be made by an approved testing laboratory and results of such tests shall be submitted to the building official. Approved testing laboratories shall comply with ASTM C 1077.

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R4405.4.6.3 A complete record of tests of materials and of concrete shall be available to the building official for inspection during progress of work and for five years after completion of the project, and shall be preserved by the inspecting engineer or architect for that purpose.

R4405.4.6.4 If doubt develops concerning the safety of a structure or member, the building official may order a structural strength investigation by analysis or by means of load tests, or by a combination of analyses and load test as set forth in Chapter 20 of ACI 318.

SECTION R4405.5
HIGH VELOCITY HURRICANE ZONES

CONCRETE QUALITY

R4405.5.1 General.

R4405.5.1.1 Concrete shall be proportioned and produced to provide an average compressive strength sufficiently high to minimize the frequency of strength test below the specified compressive strength of concrete, f'_e.

R4405.5.1.2 Requirements for f'_e shall be based on tests of cylinders made and tested as prescribed in Section R4405.5.2.2.3.

R4405.5.1.3 Unless otherwise specified, f'_e shall be based on 28 day tests. If other than 28 day tests are called for, f'_e shall be indicated in design drawings or specifications.

R4405.5.1.4 Design drawings shall show the specified compressive strength of concrete, f'_e for which each part of the structure is designed.

R4405.5.2 Evaluation and acceptance concrete.

R4405.5.2.1 Frequency of testing.

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R4405.5.2.1.1 The building official may require a reasonable number of tests to be made during the progress of the work, or may promulgate and set forth in writing such reasonable rules for requiring tests to be made by an approved laboratory as he may consider necessary to insure compliance with this code.

R4405.5.2.1.2 Not less than three specimens shall be made for each standard test.

R4405.5.2.1.3 Samples for strength of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 150 cubic yard (4.3 m^3) of concrete, nor less than once for each 5,000 square feet (465 m^2) of surface area for slabs or walls.

R4405.5.2.1.4 On a given project, if total volume of concrete is such that frequency of testing required by Section R4405.5.2.1.1 would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.

R4405.5.2.1.5 Test cylinders taken on truck-mixed concrete shall be taken at the approximate one-quarter point of the load.

R4405.5.2.1.6 The age for strength tests shall be 28 days, or where specified, at the earlier age at which the concrete is to receive its full working load.

R4405.5.2.2 Laboratory cured specimens.

R4405.5.2.2.1 A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 28 days or at a test age designated for determination of f'_c.

R4405.5.2.2.2 Samples of strength tests shall be taken in accordance with the Method of Sampling Fresh Concrete , ASTM C 172, as set forth in Chapter 43.

R4405.5.2.2.3 Cylinders for strength tests shall be molded and laboratory cured in accordance with the Method of Making and Curing Concrete Test Specimens in the Field , ASTM C 31, as set forth in Chapter 43 of this code, and tested in accordance with the Method of Test for Compressive Strength of Cylindrical Concrete Specimens , ASTM C 39, as set forth in Chapter 43.

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R4405.05.2.2.4 The strength level of an individual class of concrete shall be considered satisfactory if both of the following requirements are met:

1. Average of all sets of three consecutive strength tests equal or exceed f'_e.

2. No individual strength test (average of two cylinders) falls below f'_e by more than 500 psi (3448 kPa).

R4405.5.2.2.5 If any of the requirements of Section R4405.5.2 are not met, steps shall be taken to increase the average of subsequent strength test results. Requirements of Section R4405.5.2.4 shall be observed if any individual strength test falls below f'_e by more than 500 psi (3448 kPa).

R4405.5.2.3 Field cured specimens.

R4405.5.2.3.1 The building official may require strength tests of cylinders cured under field conditions to check adequacy of curing and protection of concrete in the structure.

R4405.5.2.3.2 Field cured cylinders shall be cured under field conditions in accordance with Section 7.4 of the Method of Making and Curing Concrete Test specimens in the Field , ASTM C 31.

R4405.5.2.3.3 Field cured test cylinders shall be molded at the same time and from the same samples as laboratory cured test cylinders.

R4405.5.2.3.4 Procedures for protecting and curing concrete shall be improved when the strength of field cured cylinders at test age designated for determination of f'_e is less than 85 percent of that of companion laboratory cured cylinders. The 85 percent may be waived if field cured strength exceeds f'_e by more than 500 psi (3448 Pa).

R4405.5.2.4 Investigation of low strength test results.

R4405.5.2.4.1 When there is a question as to the quality of the concrete in the structure, the building official may require core tests in accordance with the Standard Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete , ASTM C 42, as set forth in Chapter 43 of this code, or order load tests on that portion of the structure where the questionable concrete has been placed.

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R4405.5.2.4.2 When concrete in structures has failed to meet the minimum standard, the building official shall order analysis and reports by a registered engineer to determine the adequacy of the structure.

R4405.5.2.4.3 If the likelihood of low-strength concrete is confirmed and computations indicate that load-carrying capacity may have been significantly reduced, tests of cores drilled from the area in question may be required in accordance with the Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete , ASTM C 42, as set forth in Chapter 43 of this code. In such case, three cores shall be taken for each strength test more than 500 psi (3448 kPa) below specified value of f'_c.

R4405.5.2.4.4 If concrete in the structure will be dry under service conditions, cores shall be air dried at a temperature between 60°F and 80°F (16°C and 27°C) and a relative humidity less than 60 percent for seven days before testing and shall be tested dry. If concrete in the structure will be more than superficially wet under service conditions, cores shall be immersed in water for at least 40 hours and be tested wet.

R4405.5.2.4.5 Concrete in an area represented by core tests shall be considered structurally adequate if the average of three cores is equals to at least 85 percent of f'_c and if no single core is less than 75 percent of f'_c. To check testing accuracy, locations represented by erratic core strengths may be retested.

R4405.5.2.4.6 Slump considerations. The maximum allowable slump of concrete shall be 6 inches (152 mm). On the jobs controlled and supervised by a professional engineer, this maximum may be exceeded, but no concrete shall exceed the slump as indicated on the approved plans for proposed work.

SECTION R4405.6
HIGH-VELOCITY HURRICANE ZONES

MIXING AND PLACING CONCRETE

R4405.6.1 Preparation of equipment and place of deposit.

R4405.6.1.1 Preparation before concrete placement shall include the following:

1. All equipment for mixing and transporting concrete shall be clean.

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2. All debris shall be removed from the spaces to be occupied by the concrete.

3. Forms shall be properly coated.

4. Masonry filler units that will be in contact with concrete shall be well drenched.

5. Reinforcement shall be thoroughly cleaned of deleterious coatings.

6. Water shall be removed from place of deposit before concrete is placed unless a tremie is to be used or unless otherwise permitted by the professional engineer.

7. All laitance and other unsound material shall be removed before additional concrete is placed against hardened concrete.

R4405.6.2 Mixing.

R4405.6.2.1 All concrete shall be mixed until there is uniform distribution of materials and shall be discharged completely before the mixer is recharged.

R4405.6.2.2 Ready-mixed concrete shall be mixed and delivered in accordance with requirements of the Specifications for Ready Mixed Concrete , ASTM C 94, or the Specifications for Concrete made by Volumetric Batching and Continuous Mixing , ASTM C 685, as set forth in Chapter 43 of this code.

R4405.6.2.3 Job-mixed concrete shall be mixed in accordance with the following:

1. Mixing shall be done in a batch mixer of approved type.

2. Mixer shall be rotated at a speed recommended by the manufacturer.

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~~3. Mixing shall be continued for at least 11/2 minutes after all materials are in the drum, unless a shorter time is shown to be satisfactory by the mixing uniformity test of Specification for Ready Mixed Concrete , ASTM C 94.~~

~~4. Materials handling, batching, and mixing shall conform to applicable provisions of the Specifications for Ready Mixed Concrete , ASTM C 94.~~

~~5. A detailed record shall be kept to identify:~~

~~5.1 Number of batches produced.~~

~~5.2 Proportions of materials used.~~

~~5.3 Approximate location of final deposit in structure.~~

~~5.4 Time and date of mixing and placing.~~

~~R4405.6.3 Conveying.~~

~~R4405.6.3.1~~ ~~Concrete shall be conveyed from mixer to the place of final deposit by methods that will prevent separation or loss of the materials.~~

~~R4405.6.3.2~~ ~~Conveying equipment shall be capable of providing a supply of concrete at the site of placement without separation of ingredients and without interruptions sufficient to permit loss of plasticity between successive increments.~~

~~R4405.6.4 Depositing.~~

~~R4405.6.4.1~~ ~~Concrete shall be deposited as nearly as practicable in its final position to avoid segregation caused by re-handling or flowing.~~

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R4405.6.4.2 Concreting shall be carried on at such a rate that concrete is at all times plastic and flows readily into the spaces between reinforcement.

R4405.6.4.3 Concrete that has partially hardened or been contaminated by foreign materials shall not be deposited in the structure.

R4405.6.4.4 Retempered concrete or concrete that has been remixed after initial set shall not be used unless approved by the building official.

R4405.6.4.5 After concreting is started, it shall be carried on as a continuous operation until placing of the panel or section, as defined by its boundaries or predetermined joints is completed except as permitted or prohibited by Section R4405.7.4.

R4405.6.4.6 Top surfaces of vertically formed lifts shall be generally level.

R4405.6.4.7 When construction joints are required, joints shall be made in accordance with Section R4405.7.4.

R405.6.4.8 All concrete shall be thoroughly consolidated by suitable means during placement and shall be thoroughly worked around the reinforcement and embedded fixtures and into corners of forms.

R4405.6.5 Curing.

R4405.6.5.1 Concrete, other than high early strength, shall be maintained in a moist condition for at least the first seven days after placement, except when cured in accordance with Section R4405.6.5.3.

R4405.6.5.2 High early strength concrete shall be maintained in a moist condition for at least the first three days, except when cured in accordance with Section R4405.6.5.3.

R4405.6.5.3 Accelerated curing:

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~~1. Curing by high pressure steam, steam at atmospheric pressure, heat and moisture, or other accepted processes, may be employed to accelerate strength gain and reduce time of curing.~~

~~2. Accelerated curing shall provide a compressive strength of the concrete at the load stage considered at least equal to required design strength at that load stage.~~

~~3. The curing process shall produce concrete with a durability at least equivalent to the curing method of Section R44405.6.5.3, Item 1 or 2.~~

~~4. Supplementary strength tests in accordance with Section R4405.5.2.3 may be required to assure that curing is satisfactory.~~

~~R4405.6.6 Bonding.~~

~~R4405.6.6.1~~ ~~Before fresh concrete is deposited or placed on or against concrete which has hardened for 8 hours or longer, the forms shall be retightened, the surface of the hardened concrete shall be cleaned of all foreign matter and laitance, and dampened, but not saturated. Fresh concrete shall not be deposited or placed on or against hardened concrete so dampened before the surface is completely free of shiny spots indicating free moisture. When the concrete against which fresh concrete will be placed is less than 8 hours old, all laitance, loose particles and dirt shall be removed.~~

~~R4405.6.6.2~~ ~~Where bonding of fresh to hardened concrete is necessary, construction joints and joints between footings and walls or columns, between walls or columns and beams or floors they support, and joints in unexposed walls shall be accomplished by reinforcement, dowels, adhesives, mechanical connectors or other approved methods. Hardened concrete at joints shall be dampened, but not saturated, immediately prior to the placement of fresh concrete.~~

~~SECTION R4405.7~~
~~HIGH-VELOCITY HURRICANE ZONES~~

~~FORMWORK, EMBEDDED PIPES AND CONSTRUCTION JOINTS~~

~~R4405.7.1 Design of formwork.~~

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R4405.7.1.1 Forms shall be designed in accordance with ACI 347, Recommended Practice for Concrete Formwork.

R4405.7.1.2 Forms shall result in a final structure that conforms to shapes, lines and dimensions of the members as required by the design drawings and specifications.

R4405.7.1.3 Forms shall be substantial and sufficiently tight to prevent leakage of mortar.

R4405.7.1.4 Forms shall be properly braced or tied together to maintain position and shape.

R4405.7.1.5 Forms and their supports shall be designed so as not to damage previously placed structures.

R4405.7.1.6 Design of formwork shall include consideration of the rate and method of placing concrete; construction loads, including vertical, horizontal and impact loads; and special form requirements for construction of shells, folded plates, domes, architectural concrete or similar types of elements.

R4405.7.1.7 Forms for prestressed concrete members shall be designed and constructed to permit movement of the member without damage during application of prestressing force.

R4405.7.2 Removal of forms and shores.

R4405.7.2.1 No construction loads shall be supported on, nor any shoring removed from, any part of the structure under construction except when that portion of the structure in combination with the remaining forming and shoring system has sufficient strength to safely support its weight and loads placed thereon.

R4405.7.2.2 Sufficient strength shall be demonstrated by structural analysis considering proposed loads, strength of the forming and shoring system and concrete strength data. Concrete strength data may be based on tests of field-cured cylinders or, when approved by the building official, on other procedures to evaluate concrete strength. Structural analysis and concrete strength test data shall be furnished to the building official when so required.

R4405.7.2.3 No construction loads exceeding the combination of superimposed dead load plus specified live load shall be supported on any unshored portion of the structure under construction, unless analysis indicated adequate strength to support such additional loads.

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R4405.7.2.4 Forms shall be removed in a manner that does not impair the safety and serviceability of the structure. All concrete to be exposed by form removal shall have sufficient strength not to be damaged thereby.

R4405.7.2.5 Form supports for prestressed concrete members may be removed when sufficient prestressing has been applied to enable prestressed members to carry their dead load and anticipated construction loads.

R4405.7.3 Conduits and pipes embedded in concrete.

R4405.7.3.1 Conduits, pipes and sleeves of any material not harmful to concrete, and with limitations of this section, may be embedded in concrete with approval of the professional engineer provided they are not considered to structurally replace the displaced concrete.

R4405.7.3.2 Conduits or pipes of aluminum shall not be embedded in structural concrete unless effectively coated or covered to prevent aluminum–concrete reaction or electrolytic action between aluminum and steel.

R4405.7.3.3 Conduits, pipes and sleeves passing through a slab, wall or beam shall not impair the strength of the construction.

R4405.7.3.4 Conduits and pipes, with their fittings, embedded within a column shall not displace more than 4 percent of the area of cross section on which strength is calculated or which is required for fire protection.

R4405.7.3.5 Except when plans for conduits and pipes are approved by the professional engineer and other than those merely passing through, conduits and pipes embedded within a slab, wall or beam shall satisfy the following:

1. They shall not be larger in outside dimension than three eighths of the overall thickness of slab, wall or beam in which they are embedded.

2. They shall not be spaced closer than three diameters or widths on center.

3. They shall not impair the strength of the construction.

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R4405.7.3.6 Conduits, pipes and sleeves may be considered as replacing structurally in compression the displaced concrete, provided:

1. They are not exposed to rusting or other deterioration.

2. They are of uncoated or galvanized iron or steel not thinner than standard Schedule 40 steel pipe, and

3. They have a nominal inside diameter not over 2 inches (51 mm) and are spaced not less than three diameters on centers.

R4405.7.3.7 In addition to other requirements of Section R4405.7.3 pipes that will contain liquid, gas or vapor may be embedded in structural concrete under the following conditions:

1. Pipes and fittings shall be designed to resist effects of the material, pressure and temperature to which they will be subjected.

2. Temperature of liquid, gas or vapor shall not exceed 150°F (66°C).

3. Maximum pressure to which any piping or fittings shall be subjected shall not exceed 200 psi (1379 kPa) above atmospheric pressure.

4. All piping and fittings except as provided in Section R4405.7.3.5 shall be tested as a unit for leaks before concrete placement. Testing pressure above atmospheric pressure shall be 50 percent in excess of pressure to which piping and fittings may be subjected, but minimum testing pressure shall not be less than 150 psi (1034 kPa) above atmospheric pressure. Pressure test shall be held for 4 hours with no drop in pressure except that which may be caused by air temperature.

5. Drain pipes and other piping designed for pressures of not more than 1 psi (7 kPa) above atmospheric pressure need not be tested as required in Section R4405.7.3.7(4).

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6. Pipes carrying liquid, gas or vapor that is explosive or injurious to health shall be tested again as specified in Section R4405.7.3.7(4) after concrete has hardened.

7. No liquid, gas or vapor, except water not exceeding 90°F (32°C) nor 50 psi (350 kPa) pressure, shall be placed in the pipes until the concrete has attained its design strength.

8. In solid slabs the piping, unless it is for radiant heating, shall be placed between top and bottom reinforcement.

9. Concrete cover for pipes and fittings shall not be less than 11/2 inches (38 mm) for concrete exposed to earth or weather, nor 3/4 inch (19 mm) for concrete not exposed to weather or in contact with ground.

10. Reinforcement with an area not less than 0.002 times the area of concrete section shall be provided normal to the piping.

11. Piping and fittings shall be assembled by welding, brazing, solder sweating or other equally satisfactory methods. Screw connections shall not be permitted. Piping shall be so fabricated and installed that cutting, bending or displacement of reinforcement from its proper location will not be required.

R4405.7.4 Construction joints.

R4405.7.4.1 Surfaces of the concrete construction joints shall be cleaned and laitance removed.

R4405.7.4.2 Immediately before new concrete is placed, all construction joints shall be wetted and standing water removed.

R4405.7.4.3 Construction joints shall be so made and located as not to impair the strength of the structure. Provision shall be made for transfer of shear and other forces through construction joints.

R4405.7.4.4 Construction joints in floors shall be located near the middle of the spans of slabs, beams or girders, unless a beam intersects a girder at the middle location, in which case, joints in the girders shall be offset a distance approximately twice the width of the beam.

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R4405.7.4.5 Beams, girders or slabs supported by columns or walls shall not be cast or erected until concrete in the vertical support members is no longer plastic.

R4405.7.4.6 Beams, girders, haunches, drop panels and capitals shall be placed monolithically as part of a slab system, unless otherwise shown on design drawing.

SECTION R4405.8
HIGH-VELOCITY HURRICANE ZONES—

DETAILS OF REINFORCEMENT

R4405.8.1 Bending reinforcement.

R4405.8.1.1 All reinforcement shall be bent cold, unless otherwise permitted by the professional engineer.

R4405.8.1.2 Reinforcement partially embedded in concrete shall not be field bent, except as shown on the design drawings or permitted by the professional engineer.

R4405.8.2 Surface conditions of reinforcement.

R4405.8.2.1 At the time concrete is placed, reinforcement shall be free from mud, oil or other nonmetallic coatings that adversely affect bonding capacity.

R4405.8.2.2 Steel reinforcement, except prestressing tendons, with rust, mill scale or a combination of both shall be considered satisfactory, provided the minimum dimensions, including the height of deformations and weight of a hand-wire-brushed test specimen, are not less than applicable ASTM specification requirements.

R4405.8.2.3 Prestressing tendons shall be clean and free of oil, dirt, scale, pitting and excessive ruts. A light oxide is permissible.

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R4405.8.3 Placing reinforcement.

R4405.8.3.1 Steel reinforcement shall be accurately placed and adequately secured in position by concrete or metal chairs or spacers or other acceptable methods. The minimum clear distance between parallel bars, except in columns, shall be equal to the nominal diameter of the bars. In no case shall the clear distance between bars be less than 1 inch (25 mm), or less than one and one-third times the maximum size of the coarse aggregate. When reinforcement in beams or girders is placed in two or more layers, the clear distance between layers shall not be less than 1 inch (25 mm) nor less than the diameter of the bars, and the bars in the upper layers shall be placed directly above those in the bottom layer.

R4405.8.3.2 Unless otherwise permitted by the building official and professional engineer, reinforcement, prestressing tendons and prestressing ducts shall be placed within the following tolerances:

1. Tolerance for depth, d , and minimum concrete cover in flexural members, walls and compression members shall be as follows, where d represents the distance from the extreme compression fiber to the centroid of the tension reinforcement:

	Tolerance on "d"	Tolerance on minimum concrete cover
d < 8 in.	+/- 3/8 in.	-3/8 in.
d > 8 in.	+/- 1/2 in	-1/2 in.

Exceptions:

a. Tolerance for the clear distance to formed soffits shall be minus ¼ inch (6.3 mm).

b. Tolerance for cover shall not exceed minus one-third the minimum concrete cover required in the contract drawings nor less than 1 inch (25 mm) when exposed to weather.

2. Tolerance for longitudinal location of bends and ends of reinforcement shall be +2 inches (+102 mm) except at discontinuous ends of members where tolerance shall be + ½ inch (+12.7 mm).

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R4405.8.3.3 Welded wire fabric with a wire size not greater than W5 or D5 used in slabs not exceeding 10 feet (3048 mm) in span may be curved from a point near the top of the slab over the support to a point near the bottom of the slab at midspan, provided such reinforcement is either continuous over, or securely anchored at, the support.

R4405.8.3.4 Welding of crossing bars shall not be permitted for assembly of reinforcement unless approved by the professional engineer of record.

R4405.8.3.5 Spacing limits and concrete cover for reinforcement shall be shown on the design drawings.

R4405.8.4 Splices in reinforcement.

R4405.8.4.1 In slabs, beams and girders, splices in reinforcement at points of maximum stress shall be avoided wherever possible. Such splices, where used, shall be welded, lapped or otherwise fully developed, but, in any case, shall transfer the entire stress from bar to bar without exceeding the allowable bond and shear stresses. The minimum overlap for a lapped splice shall be 24 bar diameters, but not less than 12 inches (25 mm) for bars and in accordance with Section 12.15 and 12.16 of ACI 318. The clear distance between bars shall also apply to the clear distance from a contact splice and adjacent splices or bars.

R4405.8.4.2 Reinforcement shall be spliced only as required or permitted on design drawings, or in specifications or as authorized by the licensed engineer of record.

R4405.8.4.3 Lap splices shall not be used for bars larger than #11 except as provided in ACI 318.

R4405.8.4.4 Lap splices of bundled bars shall be based on the lap splice length required for individual bars within a bundle, increased 20 percent for a 3-bar bundle and 33 percent for a 4-bar bundle. Individual bar splices within a bundle shall not overlap.

R4405.8.4.5 Bars spliced by noncontact lap splices in flexural members shall not be spaced transversely farther apart than one-fifth the required lap splice length, nor 6 inches (152 mm).

R4405.8.4.6 Welded splices may be used, provided the metallurgical properties of the bars are suitable as determined by the licensed engineer of record in accordance with AWS D1.4.

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R4405.8.4.7 End-bearing splices.

R4405.8.4.7.1 In bars required for compression only, compressive stress may be transmitted by bearing of square cut ends held in concentric contact by a suitable device.

R4405.8.4.7.2 Bar ends shall terminate in flat surfaces within 1 1/2 degrees of a right angle to the axis of the bars and shall be fitted within 3 degrees of full bearing after assembly.

R4405.8.4.7.3 End bearing splices shall be used only in members containing closed ties, closed stirrups, or spirals.

R4405.8.4.8 Welded splices in reinforcing bars shall be by certified welders and shall comply with the Standard Structural Welding Code-Reinforcing Steel, AWS D1.4, as set forth in Chapter 43 of this code.

R4405.8.5 Concrete protection for reinforcement (non-prestressed).

R4405.8.5.1 The reinforcement of footings and other principal structural members in which the concrete is deposited against the ground shall have not less than 3 inches (76 mm) of concrete between it and the ground contact surface. If the concrete surfaces after removal of the forms are to be exposed to the weather or be in contact with the ground, the reinforcement shall be protected with not less than 2 inches (51 mm) of concrete for bars larger than No. 5 and 1 ½ inches (38 mm) for No. 5 bars or smaller except as set forth in Section R4406.8.5.5.

R4405.8.5.2 The concrete protective covering for reinforcement at surfaces not exposed directly to the ground or weather shall be not less than 3/4 inch (19 mm) for slabs and wall; and not less than 1 ½ inches (38 mm) for beams, girders and columns. In concrete ribbed floors in which the clear distance between ribs is not more than 30 inches (762 mm), the protection of reinforcement shall be at least 3/4 inch (19 mm).

R4405.8.5.3 Concrete protection for reinforcement shall in all cases be as least equal to the diameter of bars except for concrete slabs and joists as set forth herein.

R4405.8.5.4 Exposed reinforcement bars intended for bonding with future extensions shall be protected from corrosion by concrete or other adequate covering.

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R4405.8.5.5 For exterior balcony slabs, slab surface shall be shall be sloped 1/8 unit in 12 units or greater to safeguard against ponding of water and slabs shall be designed and constructed in accordance with the provisions of ACI 318.

R4405.8.5.6 Concrete cover for cast in place, precast and prestressed concrete shall be in accordance with ACI 318 if not otherwise specified in this section. When this code requires a thickness of cover for fire protection greater than the minimum concrete specified in ACI 318, the greater thickness shall be used.

R4405.8.5.7 Exposed reinforcement, inserts and plates intended for bonding with future extensions shall be protected from corrosion.

SECTION R4405.9
HIGH-VELOCITY HURRICANE ZONES

PRECAST CONCRETE UNITS

R4405.9.1 General.

R4405.9.1.1 Precast concrete units shall comply with the minimum requirements set forth in this section, and the standard set forth in Section R4405.2.3.

R4405.8.1.2 All precast concrete elements and their attachments (including embedments) to the main structural frame shall be designed by, and bear the seal of a Florida registered architect or a Florida registered engineer, which architect or engineer shall be proficient in structural design. The design shall be based on rational analysis for loads set forth in Section R4403. The architect/engineer of record may delegate this responsibility to a Florida registered delegated engineer. In that case, shop drawings and design calculations prepared by such delegated engineer shall be reviewed and approved by the architect and the engineer of record.

R4405.9.1.3 Only the material cast monolithically with the units at the time of manufacture shall be used in computing stresses unless adequate and approved shear transfer is provided.

R4405.9.1.4 The building official may promulgate and set forth in writing such reasonable rules for requiring tests to be made by an approved laboratory as he may consider necessary to insure compliance with this code or uniformity of the products produced. The quantity of tests shall be based on consideration of safety or volume of output.

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R4405.9.1.5 The building official or his representative shall have free access to the plant of any producer at all hours of normal operation, and failure to permit such access shall be cause for revocation of approval.

R4405.9.1.6 Failure of any product to satisfy in every respect the quality prescribed, or failure to conform with plans and specifications, shall be cause for rejection of the products.

R4405.9.2 Statements of responsibilities of architects and professional engineers on design of structures using precast concrete components.

R4405.9.2.1 The structural construction documents shall indicate the configuration of precast components and shall include details of supports, anchors and connections for those components. Permit documents shall include sufficient details describing the attachment of precast units (including embedments) to the main structure.

R4405.9.2.2 The precast permit documents shall bear the signature and seal of the professional architect or engineer charged with the responsibility of the design of the precast units. The architect or engineer of record may delegate this responsibility to a Florida registered delegated engineer. In that case, shop drawings and design calculations prepared by such delegated engineer shall be reviewed and approved by the architect and/or the engineer of record as an indication that his intent has been understood and that the specified criteria have been used.

R4405.9.2.3 The structural submittals shall include component details, calculations and fabrication and erection drawings. All such submittals shall identify the specific project.

R4405.9.3 Aggregate. The maximum size of the aggregate for precast units shall be not larger than one-third of the narrowest dimension between sides of the forms of the member in which the unit is cast nor larger than three-fourths of the minimum clear spacing between reinforcing bars and sides of the forms, except that where concrete is placed by means of high-frequency vibration, the maximum size of the aggregate shall not be larger than one-half of the narrowest dimension between sides of the form.

R4405.9.4 Strength of concrete.

R4405.9.4.1 Concrete for precast structural units made of crushed stone or other heavy aggregate shall have a compressive strength of not less than 2,500 psi (17 238 kPa) at 28 days.

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R4405.9.4.2 Concrete for precast units made of light-weight aggregate concrete shall follow the general provisions of Section R4405.1.1.2 with consideration of the nature and limitations of the aggregate and the strength of the product.

R4405.9.5 Workmanship.

R4405.9.5.1 The mix, the gradation of the aggregate and the workability shall be such as to insure complete filling of the form and continuous intimate bond between the concrete and all steel.

R4405.9.5.2 Handling and conveying before curing shall be reduced to a minimum. Machinery for this purpose should be so designed that the unit will not be subject to bending or shock which would produce incipient cracks or broken edges or corners. Precast units shall not be freely transported or placed until the concrete is at least 14 days old, if made with regular cement, or at least seven days old, if made with Type III cement, or until its strength, as established by definite tests, is at least 60 percent of the required 28-day strength.

R4405.9.5.3 The use of precast structural units not complying with ACI requirements or having visible cracks, honeycomb, exposed reinforcing except at ends or, with a compressive section dimension more than 1/8 inch (3.1 mm) less than specified dimension shall not be permitted.

R4405.9.6 Curing.

R4405.9.6.1 No precast structural unit shall be removed from the form until the concrete has attained a compressive strength of 50 percent of the 28-day design strength but not less than 1,250 psi (8619 kPa) as verified by representative tests.

R4405.9.6.2 Curing by high pressure steam, steam vapor or other accepted processes may be employed to accelerate the hardening of the concrete and to reduce the time of curing.

R4405.9.6.3 To ensure the eventual placement of the units in the structure without damage, the handling shall be done in such a manner that bending shall be reduced to a minimum or prevented.

R4405.9.7 Identification and marking. All joists, beams, girders and other units shall show some mark plainly indicating the top of the unit. This mark or symbol shall indicate the manufacturer, the date of manufacture and the length, size and type of reinforcing.

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R4405.9.8 Cutting of holes. No openings or channels not provided for in the structural design shall be made on the job without the specific approval of the professional engineer in accordance with his written, detailed instructions covering such work.

R4405.9.9 Anchorage. Anchorage of all precast concrete units shall be designed, based on rational analysis, to transmit loads and other forces to the structural frame.

R4405.9.10 Bridging. Joists shall be secured against lateral displacement by cast-in-place bridging, and such bridging shall be spaced not to exceed 32 times the width of the compression flange of the joist except that for roof systems, cast-in-place Portland concrete slabs embedding the top flanges not less than ½ inch (13 mm), or steel inserts cast in the joist heads to which bulb-tees supporting gypsum decks are welded, shall be accepted in lieu of bridging.

R4405.9.11 Connections. All joints and connections will perform their function at all stages of loading without overstress and with proper safety factors against failure caused by overload. Loading conditions to be considered in the design of joints and connections are service loads, including wind forces, volume changes resulting from shrinkage, creep, and temperature change, reaction loads, and loading encountered in stripping forms, shoring and removal of shores, storage and transportation of members.

R4405.9.12 Inspections.

R4405.9.12.1 All structural precast units shall be inspected for quality control by an architect or professional engineer qualified to perform these inspections prior to the concrete placement at the casting yard.

R4405.9.12.2 All structural precast units and their attachments to the main structure shall be inspected after erection, but before concealment. Such inspections shall be performed by a Florida registered architect or licensed engineer.

SECTION R4405.10
HIGH-VELOCITY HURRICANE ZONES

PRESTRESSED CONCRETE

R4405.10.1 Prestressed concrete, as defined in Section R4405.3, shall comply with this section.

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~~**R4405.10.1.1** All prestressed structural items shall be designed by a registered licensed engineer. Openings or channels not provided for in the structural design shall not be made on the job without the specific approval of the design licensed engineer.~~

~~**R4405.10.1.2** The building official may promulgate and set forth in writing such reasonable rules for requiring tests to be made by an approved laboratory as he may consider necessary to insure compliance with this code or uniformity of the products produced.~~

~~**R4405.10.1.3** The building official or his or her representative shall have free access to the plant of any producer at all hours of normal operation. Failure to permit such access shall be cause for revocation of approval.~~

~~**R4405.10.1.4** Failure of any product to satisfy the quality prescribed or failure to conform to plans and specifications shall be cause for rejection of the product.~~

~~**R4405.10.2 Statements of responsibilities of architects and professional engineers on design of cast-in-place post-tensioned concrete structural systems.**~~

~~**R4405.10.2.1** The structural construction documents shall show the magnitude and location of all prestressing forces and all design assumptions.~~

~~**R4405.10.2.2** The structural engineer of record and/or the architect of record shall require the submission of calculations and installation drawings from a specialty engineer for post-tensioning systems for review by the structural engineer of record and/or the architect of record. Review is an indication that his or her intent has been understood and that the specified criteria have been used. The installation drawings shall provide full details of materials to be used including necessary accessories and instructions for construction and shall identify the specific project and shall bear the impressed seal, signature and date of the specialty engineer who prepared them.~~

~~**R4405.10.2.3** It is the responsibility of the structural engineer of record and/or the architect of record to review the post-tensioning system installation drawings so that the drawings are coordinated with the reinforcing steel shop drawings.~~

~~**R4405.10.2.4** Determining the effect of post-tensioning on other parts of the building is the responsibility of the structural engineer of record and/or the architect of record.~~

~~**R4405.10.3 Design and construction.**~~

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R4405.10.3.1 Design and construction shall be in accordance with Chapter 18 of ACI 318.

R4405.10.3.2 Calcium chloride shall not be used in concrete for prestressed members.

R4405.10.4 Tendon and anchorage zones.

R4405.10.4.1 Reinforcement shall be provided where required in tendon anchorage zones to resist bursting, splitting, and spalling forces induced by tendon anchorage. Regions of abrupt change in section shall be adequately reinforced.

R4405.10.4.2 End blocks shall be provided where required for support bearing or for distribution of concentrated prestressing forces.

R4405.10.4.3 Post-tensioning anchorage and supporting concrete shall be designed to resist maximum jacking force for strength of concrete at time of prestressing.

R4405.10.4.4 Post-tensioning anchorage zones shall be designed to develop the guaranteed ultimate tensile strength of prestressing tendons using a strength reduction factor of 0.90 for concrete.

R4405.10.5 Corrosion protection for unbonded prestressing tendons.

R4405.10.5.1 Unbonded tendons shall be completely coated with suitable material to ensure corrosion protection.

R4405.10.5.2 Tendon wrapping shall be continuous over the entire length to be unbonded, and shall prevent intrusion of cement paste or loss of coating materials during concrete placement.

R4405.10.6 Post-tensioning ducts.

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~~**R4405.10.6.1** Ducts for grouted or unbonded tendons shall be mortar-tight and nonreactive with concrete, tendons or filler material.~~

~~**R4405.10.6.2** Ducts for grouted single wire, strand or bar tendons shall have an inside diameter at least ¼ inch (6.3 mm) larger than tendon diameter.~~

~~**R4405.10.6.3** Ducts for grouted multiple wire, strand or bar tendons shall have an inside cross-sectional area at least two times the net area of the tendons.~~

~~**R4405.10.7 Grout for prestressing tendons.**~~

~~**R4405.10.7.1** Grout shall consist of Portland cement and water; or Portland cement, sand and water.~~

~~**R4405.10.7.2** Materials for grout shall conform as specified in ACI 318 and be as follows:~~

~~1. Portland cement.~~

~~2. Water content shall be minimum necessary for proper pumping of grout; however, water-cement ratio shall not exceed 0.45 by weight.~~

~~3. Sand, if used, shall conform to Standard Specifications for Aggregate for Masonry Mortar , ASTM C 144, except that gradation may be modified as necessary to obtain satisfactory workability.~~

~~4. Admixtures conforming to ACI 318 and known to have no injurious effects on grout, steel or concrete may be used. Calcium chloride shall not be used.~~

~~5. Water shall not be added to increase grout flow ability that has been decreased by delayed use of grout.~~

~~6. Grout temperatures shall not be above 90°F (32°C) during mixing and pumping.~~

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~~**R4405.10.8 Protection for prestressing tendons.** Burning or welding operations in the vicinity of prestressing tendons shall be carefully performed, so that tendons are not subject to excessive temperatures, welding sparks or ground currents.~~

~~**R4405.10.9 Application and measurement of prestressing force.**~~

~~**R4405.10.9.1** Prestressing force shall be determined by both of the following methods and the cause of any difference in force determination that exceeds 5 percent shall be ascertained and corrected.~~

~~1. Measurement of tendon elongation. Required elongation shall be determined from average load–elongation curves for prestressing tendons used.~~

~~2. Observation of jacking force on a calibrated gauge or load cell or by use of a calibrated dynamometer.~~

~~**R4405.10.9.2** Where transfer of force from bulkheads or pretensioning bed to concrete is accomplished by flame cutting prestressing tendons, cutting points and cutting sequence shall be predetermined to avoid undesired temporary stresses.~~

~~**R4405.10.9.3** Long lengths of exposed pretensioned strand shall be cut near the member to minimize shock to concrete.~~

~~**R4405.10.9.4** Total loss of prestress as a result of un-replaced broken tendons shall not exceed 2 percent of total prestress.~~

~~**R4405.10.10 Post-tensioning anchorages and couplers.**~~

~~**R4405.10.10.1** Couplers shall be placed in areas approved by the licensed engineer and enclosed in housing long enough to permit necessary movements.~~

~~**R4405.10.10.2** In unbonded construction subject to repetitive loads, special attention shall be given to the possibility of fatigue in anchorages and couplers.~~

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~~**R4405.10.10.3** Anchorage and end fittings shall be permanently protected against corrosion.~~

~~SECTION R4405.11~~
~~HIGH-VELOCITY HURRICANE ZONES —~~

~~PNEUMATICALLY PLACED CONCRETE (SHOTCRETE)~~

~~R4405.11.1 General.~~

~~**R4405.11.1.1** Pneumatically placed concrete is a proportioned combination of fine aggregate Portland cement and water which, after mixing, is pneumatically projected by air directly onto the surface to which it is to be applied.~~

~~**R4405.11.1.2** Pneumatically placed concrete shall conform to all requirements of Specifications for Materials, Proportioning and Application of Shotcrete, ACI 506.2 published by the American Concrete Institute, except as modified herein.~~

~~**R4405.11.1.3** Pneumatically placed concrete shall be composed of Portland cement, aggregate and water proportioned to produce a concrete suitable for pneumatic application.~~

~~**R4405.11.1.4** Concrete ingredients shall be selected and proportioned in a manner that will produce concrete which will be extremely strong, dense and resistant to weathering and abrasion.~~

~~**R4405.11.2 Sampling and testing cement and aggregate.** The contractor shall determine the source, kind and quality of the cement and aggregates to be used in the work well in advance of the time scheduled for starting the work and when so directed by the building official shall submit such information for approval before starting shotcrete operation.~~

~~**R4405.11.3 Surface preparation.** To ensure adequate bond, the newly chipped and sandblasted surface shall be thoroughly moistened with water prior to application of shotcrete. In no instance shall shotcrete be applied in an area where free running water exists.~~

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R4405.11.4 Proportioning. Prior to the start of shotcreting, the contractor shall submit to the licensed engineer the recommended mix as a ratio of cement to aggregate. The recommended mix shall be on the basis of test data from prior experience.

R4405.11.5 Mixing.

R4405.11.5.1 Shotcrete shall be thoroughly mixed by machine and then passed through a sieve to remove all large particles before placing in the hopper of the cement gun. The mixture shall not be permitted to become damp. Each batch should be entirely discharged before recharging is begun. The mixer should be cleaned thoroughly enough to remove all adherent materials from the mixing vanes and from the drum at regular intervals.

R4405.11.5.2 Water in any amount shall not be added to the mix before it enters the cement gun. Quantities of water shall be controlled by a valve at the nozzle of the gun. Water content shall be adjusted as required for proper placement, but shall in no case exceed 4 gallons (15 L) of water per sack of cement, including the water contained in the aggregate.

R4405.11.5.3 Remixing or tempering shall not be permitted. Mixed material that has stood 45 minutes without being used shall be discarded. Rebound materials shall not be reused.

R4405.11.6 Application.

R4405.11.6.1 In shooting walls and columns, application shall begin at the bottom and the first coat shall completely embed the reinforcement to the form.

R4405.11.6.2 In shooting beams, application shall begin at the bottom and a surface at right angles to the nozzle shall be maintained.

R4405.11.6.3 In shooting slabs, the nozzle shall be held at a slight angle to the work so that rebound is blown on to the finished portion where it shall be removed.

R4405.11.6.4 Corners shall be filled first. "Shooting" shall be from an angle as near perpendicular to the surface as practicable, with the nozzle held approximately 3 feet (915 mm) from the work, except in confined control. If the flow of material at the nozzle is not uniform and slugs, sand spots or wet sloughs result, the nozzleman shall direct the nozzle away from the work until the faulty conditions are corrected. Such defects shall be replaced as the work progresses.

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R4405.11.6.5 Shotcreting shall be suspended if:

1. Air velocity separates the cement from the sand at the nozzle.

2. Temperature approaches freezing and the newly placed shotcrete cannot be protected.

R4405.11.6.6 The time interval between successive layers in sloping, vertical or overhanging work must be sufficient to allow initial but not final set to develop. At the time the initial set is developing, the surface shall be cleaned to remove the thin film of laitance in order to provide a good bond with succeeding applications.

R4405.11.7 Construction joints. Construction joints or day's work joints shall be sloped off to a thin, clean, regular edge, preferably at a 45 degree (0.78 rad) slope. Before placing the adjoining work, the slope portion and adjacent shotcrete shall be thoroughly cleaned as necessary, then moistened and scoured with an air jet.

R4405.11.8 Curing and protection.

R4405.11.8.1 Curing shall be in accordance with ACI 506.2 depending upon atmospheric condition.

R4405.11.8.2 Immediately after placement, shotcrete shall be maintained in a moist condition for at least the first 24 hours.

R4405.11.8.3 Final curing shall continue for seven days after placement if Type I Portland cement is used, or for three days if high-early-strength Type III Portland cement is used, or until the specified strength is attained. Final curing may consist of the initial curing process or an approved moisture-retaining covering.

R4405.11.8.4 Natural curing may be used when relative humidity remains above 85 percent when approved by the licensed engineer of record.

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SECTION R4405.12
HIGH-VELOCITY HURRICANE ZONES

LIGHTWEIGHT INSULATING CONCRETE FILL

R4405.12.1 Lightweight insulating concrete fill. Material produced with or without aggregate additions to Portland cement, water and air to form a hardened material possessing insulating qualities, which, when oven dried shall have a unit weight no greater than 50 pcf (801 kg/m^3).

R4405.12.1.1 Aggregate lightweight insulating concrete. Insulating concrete fill formulated predominantly with perlite, vermiculite or expanded polystyrene beads. It shall have a minimum compressive strength of 125 psi (861.8 kPa) when tested in compliance with ASTM C 495 and C 796.

R4405.12.1.2 Cellular lightweight insulating concrete. Insulating concrete fill formulated by mixing a hydrated cementitious matrix around non-interconnecting air cells created by the addition of foam concentrates formed from hydrolyzed proteins or synthetic surfactants. The cured cellular lightweight insulating concrete shall have minimum compressive strength of 160 psi (1103 kPa) when tested in compliance with ASTM C 495 and C 796.

R4405.12.1.3 Cellular/aggregate (Hybrid) lightweight insulating concrete. Insulated concrete fill formulated by combining foam concentrates with low-density aggregates to import properties of both aggregate and cellular lightweight insulating fill. It shall have a minimum compressive strength of 200 psi (1379 kPa) when tested in compliance with ASTM C 495 and C 796.

R4405.12.1.4 Walkability. A term defining the ability of lightweight insulating fill to withstand anticipated construction traffic during the roof membrane application without significant indentations in the lightweight insulating concrete fill surface.

R4405.12.2 Inspection.

R4405.12.2.1 Application of all lightweight insulating concrete fill roof decks shall be by applicators approved by the lightweight insulating concrete deck manufacturer. Product Approval shall be required for all lightweight insulation concrete fill systems.

R4405.12.2.2 The permit holder shall notify the building official 48 hours prior to the pouring of lightweight insulating concrete fill.

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~~**R4405.12.2.3** The permit holder shall make available to the building official a job log with the following minimum items.~~

~~1. Cast density recordings/hour~~

~~2. Product evaluation for application~~

~~3. Date and job locations identified~~

~~4. Results of any field test conducted.~~

~~**R4405.12.2.4** The building official shall have clear access and clear path at his option for a walkability inspection of lightweight insulating concrete fill 24 hours after placement.~~

~~**R4405.12.3 Testing. The building official may require tests of the lightweight insulating concrete fill to confirm the fastener withdrawal resistance, compressive strength or drainage ability.**~~

~~**R4405.12.3.1** Existing roof assemblies to receive lightweight insulating concrete fill other than galvanized G-90 steel deck or structural concrete deck shall be tested for uplift for adhesion to the substrate to confirm compliance with design pressure.~~

~~**R4405.12.4 Materials and limitations of use. Lightweight insulating concrete fill, in conjunction with galvanized formed steel sheets, shall not be used as a roof deck in areas where highly corrosive chemicals are used or stored.**~~

~~**R4405.12.4.1** 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. No lightweight insulating concrete shall be poured over a painted or non-galvanized steel deck.~~

~~1. Lightweight insulating concrete fill over structural concrete slabs, twin tees, precast units or other non venting substrates shall be vented, to allow the escape of excess moisture~~

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~~**R4405.12.4.2** Minimum thickness of lightweight insulating concrete fill shall be 2 inches (51 mm) over the top plane of the substrate unless otherwise specified in the Product Approval. In all cases, lightweight insulating concrete shall be of sufficient thickness to receive the specific base ply fastener throughout the roof deck.~~

~~**R4405.12.4.3** Minimum compressive strength at 28 days shall be as follows:~~

~~1. Aggregate concrete 125 psi (5985 Pa).~~

~~2. Cellular type: nailed base sheet 160 psi (7661 Pa).~~

~~3. Cellular type: adhered membrane systems 250 psi (11 970 Pa).~~

~~**R4405.12.4.4** 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.~~

~~**R4405.12.4.5** Chemical admixtures shall be in compliance with ASTM C 494. Calcium chloride or any admixture containing chloride salts shall not be used in insulating concrete. Fiber reinforcement may be used to control cracking. Mineral admixtures shall conform to ASTM C 618.~~

~~**R4405.12.4.6** Vermiculite or perlite shall be in compliance with ASTM C 332, Group I. Foam concentrates shall be in compliance with ASTM C 796 and ASTM C 869.~~

~~**R4405.12.4.7** Mixing, placing and finishing shall be in compliance with the deck system Product Approval. Slurry coating, two-density casting and double casting shall be acceptable per the specific manufacturer's recommendations.~~

~~**R4405.12.4.8** If the lightweight insulating concrete deck is to receive Product Approval for a direct-adhered roofing system, the deck surface shall be prepared to the requirements set forth in the roof system Product Approval.~~

~~**R4405.12.4.9** All base ply fasteners for use in lightweight insulating concrete roof decks shall have a Product Approval for use with the specific lightweight insulating concrete roof system in compliance with manufacturer's recommendations and the design pressure of Section R4403.~~

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R4405.12.4.10 The lightweight insulating concrete fill fastener withdrawal shall have a minimum resistance for new pours of:

1. 60 pounds (267 N) in 28 days when the fastener is installed and allowed to age in the concrete.

2. 40 pounds (178 N) at time of roofing.

R4405.12.4.11 Lightweight insulating concrete fill system expansion joint shall be provided at the following locations:

1. Where expansion or contraction joints are provided in the structural assembly.

2. Where steel framing, structural steel, or decking change direction.

3. Where separate wings of "L," "U," "T" or similar configurations exist.

4. Where the type of decking changes (for example, where a precast concrete deck and a steel deck abut).

5. Whenever additions are connected to existing buildings.

6. At junctions where interior heating conditions change.

7. Wherever differential movement between vertical walls and the roof deck may occur.

R4405.12.4.12 Insulation board with lightweight insulating concrete fill shall conform to Type I expanded polystyrene insulation as defined in ASTM C 578. 1. Installation of insulating board in conjunction with lightweight insulating concrete shall comply with uplift requirements set forth in Section R4403. Insulation panels shall be placed in a minimum 1/8 inch (3.2 mm) slurry bed of insulating concrete while the material is still in a plastic state and shall be covered with insulating concrete within the same work day of placement of the insulating panel. The minimum 2 inch (51 mm) continuous pour is required so as not to compromise the diagram design. Insulation panels shall be provided with holes and/or slots for keying and/or slots for venting.

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~~**R4405.12.4.13** Reinforcing mesh shall be provided when necessary to meet fire rating and/or special structural design requirements. Refer to a specific Product Approval for the specific requirements applicable to the product being installed.~~

~~1. Fibers may be added where control of plastic shrinkage and cracking is required. Refer to the Product Approval for the specific requirements applicable to the product being installed.~~

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SECTION R4405
HIGH-VELOCITY HURRICANE ZONES — CONCRETE

R4405.1 ~~General~~ Refer to Chapter 19 of the Florida Building Code, Building.

~~**R4405.1.1 Scope.** This section prescribes requirements for reinforced concrete in construction regulated by this code.~~

~~**R4405.1.2 Application.** Reinforced concrete shall be of the materials, proportions strength and consistency as set forth in this section and shall be designed by methods admitting of rational analysis according to established principles of mechanics.~~

~~**R4405.1.3 Requirements.** All structures of reinforced concrete, including prestressed concrete, shall be designed and constructed in accordance with the provisions of ACI 318 as adopted herein.~~

~~**R4405.1.4 Workmanship.** Concrete construction shall be in conformance with the tolerance, quality and methods of construction set forth in Section R4405.2.~~

~~SECTION R4405.2~~
~~HIGH-VELOCITY HURRICANE ZONES — STANDARDS~~

~~**R4405.2.1** The following Standards are hereby adopted as part of this code as set forth in Chapter 43 of this code.~~

~~**R4405.2.2 American Concrete Institute (ACI).**~~

~~1. Standard Tolerances for Concrete Construction and Materials, ACI 117.~~

~~2. Specifications for Structural Concrete for Buildings, ACI 301.~~

~~3. Manual of Standard Practice for Detailing Reinforced Concrete Structures, ACI 315.~~

~~4. Building Code Requirements for Reinforced Concrete, ACI 318.~~

~~5. Recommended Practice for Concrete Formwork, ACI 347.~~

~~6. Recommended Practice for Shotcreting, ACI 506.~~

~~7. Specification for Materials, Proportioning, and Application of Shotcrete, ACI 506.2.~~

~~8. Deformed and Plain Billet Steel Bars for Concrete Reinforcement, ASTM A615, including S1.~~

~~**R4405.2.3 American National Standards Institute (ANSI)/American Society of Civil Engineers (ASCE).**~~

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1. Specifications for the Design and Construction of Composite Slabs and Commentary on Specifications for the Design and Construction of Composite Slabs, ANSI/ASCE 3.

2. Guideline for Structural Assessment of Existing Buildings, ANSI/ASCE 11.

R4405.2.4 American Society for Testing Materials (ASTM).

1. Deformed and Plain Billet Steel Bars for Concrete Reinforcement, ASTM A 615, including.S1.

2. Testing Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation, ASTM C 1077.

SECTION R4405.3
HIGH-VELOCITY HURRICANE ZONES — DEFINITIONS

R4405.3.1 The following definitions apply to the provisions of Sections 4405.1 through 4405.11.

PLAIN CONCRETE. Concrete that is either unreinforced or contains less reinforcement than the minimum amount specified for reinforced concrete.

REINFORCED CONCRETE. Concrete reinforced with no less than the minimum amount required by ACI 318, prestressed or non-prestressed, and designed on the assumption that the two materials act together in resisting forces.

PRESTRESSED CONCRETE. Reinforced concrete in which internal stresses have been introduced to reduce potential tensile stresses in concrete resulting from loads, The term prestressed concrete refers to pretensioned concrete in which the reinforcing is tensioned before hardening of the concrete, to postensioned concrete in which the reinforcing is tensioned after hardening of the concrete, or combinations of both pretensioning and posttensioning.

PRECAST CONCRETE. Plain or reinforced concrete elements cast elsewhere than their final position in a structure.

SHOTCRETE. Mortar or concrete pneumatically projected at high velocity onto a surface.

SECTION R4405.4
HIGH-VELOCITY HURRICANE ZONES — MATERIALS

R4405.4.1 Cements. Cements shall conform to one of the following specifications for Portland cement as set forth in Chapter 43.

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1. **Portland Cement**, ASTM C 150

2. **Blended Hydraulic Cements**, ASTM C 595, excluding Types S and SA, which are not intended as principal cementing constituents of structural concrete.

R4405.4.2 Aggregates for concrete shall conform to one of the following specifications as set forth in Chapter 43 of this code or Paragraph R4405.4.2.1.

1. **Concrete Aggregates**, ASTM C33.

2. **Lightweight Aggregates for Structural Concrete**, ASTM C330.

R4405.4.2.1 Gradation of locally produced sand and crushed rock aggregate shall be as follows:

COARSE AGGREGATE	PERCENT PASSING
1 ½ -inch sieve	100
1-inch sieve	95 - 100
½ -inch sieve	25 - 60
#4 sieve	0 - 10
#8 sieve	0 - 5

FINE AGGREGATE	PERCENT PASSING
3/8 -inch sieve	100
#4 sieve	90 - 100
#8 sieve	70 - 95
#16 sieve	50 - 85
#30 sieve	30 - 70
#50 sieve	10 - 45
#100 sieve	0 - 10

R4405.4.2.2 Aggregates failing to meet ASTM C 33, ASTM C 330 or the above special gradation but which have been shown by special test or actual service to produce concrete of adequate strength and durability may be used when certified by the engineer.

R4405.4.2.3 Aggregates shall be quarried or washed in fresh water and shall contain not more than 1/20 of 1 percent salt by weight.

R4405.4.3 Water used in mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials or other substances that may be deleterious to concrete or reinforcement.

R4405.4.3.1 Mixing water for concrete, including that portion of mixing water contributed in the form of free moisture on aggregates, shall not contain deleterious amounts of chloride ion.

R4405.4.4 Reinforcement.

R4405.4.4.1 Deformed reinforcement shall conform to one of the specifications as set forth in Chapter 43, except as provided in Section 3.5 of ACI 318.

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R4405.4.4.2 Prestressing tendons shall conform to one of the specifications as set forth in Chapter 43.

Exception: Wire strands and bars not specifically listed in ASTM A 421, A 416, or A 722 may be used provided they conform to minimum requirements of these specifications and do not have properties that make them less satisfactory than those listed in ASTM A 416, A 421 or A 722.

R4405.4.4.3 Reinforcement consisting of structural steel, steel pipe or steel tubing may be used as specified in ACI 318.

R4405.4.4.4 All welding of reinforcement shall conform to the *Structural Welding Code - Reinforcing Steel* , AWS D1.4, as set forth in Chapter 43.

R4405.4.4.5 Reinforcement to be welded shall be indicated on the drawings, and welding procedures to be used shall be specified. ASTM steel specifications, except ASTM A 706, shall be supplemented to require a report of material properties necessary to conform to welding procedures specified in AWS D1.4.

R4405.4.4.6 Deformed reinforcement may be galvanized or epoxy-coated in accordance with the *Specifications for Zinc-Coated (galvanized) Bars for Concrete Reinforcement* , ASTM A 767 or the *Specification for Epoxy-Coated Bars* , ASTM A 775. Zinc or epoxy-coated reinforcement shall conform to ASTM A 615, A 616 (S1), A 617 or A 706.

R4405.4.5 Admixtures.

R4405.4.5.1 Admixtures to be used in concrete shall conform to one of the specifications set forth in Chapter 43.

R4405.4.5.2 An admixture shall be shown capable of maintaining essentially the same composition and performance throughout the work as the product used in establishing concrete proportions.

R4405.4.5.3 Admixtures containing chloride ions shall not be used in concrete if their use will produce a deleterious concentration of chloride ion in the mixing water.

R4405.4.6 Test of materials.

R4405.4.6.1 The building official, or his authorized representative, shall have the right to order the test of any material entering into concrete or reinforced concrete to determine its suitability for the purpose; to order reasonable tests of the concrete from time to time to determine whether the materials and methods in use are such as to produce concrete of the necessary quality; and to order the test under load of any portion of a completed structure when conditions have been such as to leave doubt as to the adequacy of the structure to serve the purpose for which it is intended.

R4405.4.6.2 Materials and of concrete shall be tested in accordance with applicable standards of the ASTM International (ASTM) as listed in Chapter 43. Tests shall be made by an approved testing laboratory and results of such tests shall be submitted to the building official. Approved testing laboratories shall comply with ASTM C 1077.

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R4405.4.6.2 Materials and of concrete shall be tested in accordance with applicable standards of the ASTM International (ASTM) as listed in Chapter 43. Tests shall be made by an approved testing laboratory and results of such tests shall be submitted to the building official. Approved testing laboratories shall comply with ASTM C 1077.

R4405.4.6.3 A complete record of tests of materials and of concrete shall be available to the building official for inspection during progress of work and for five years after completion of the project, and shall be preserved by the inspecting engineer or architect for that purpose.

R4405.4.6.4 If doubt develops concerning the safety of a structure or member, the building official may order a structural strength investigation by analysis or by means of load tests, or by a combination of analyses and load test as set forth in Chapter 20 of ACI 318.

SECTION R4405.5
HIGH VELOCITY HURRICANE ZONES — CONCRETE QUALITY

R4405.5.1 General.

R4405.5.1.1 Concrete shall be proportioned and produced to provide an average compressive strength sufficiently high to minimize the frequency of strength test below the specified compressive strength of concrete, f'_c.

R4405.5.1.2 Requirements for f'_c shall be based on tests of cylinders made and tested as prescribed in Section R4405.5.2.2.3.

R4405.5.1.3 Unless otherwise specified, f'_c shall be based on 28-day tests. If other than 28-day tests are called for, f'_c shall be indicated in design drawings or specifications.

R4405.5.1.4 Design drawings shall show the specified compressive strength of concrete, f'_c for which each part of the structure is designed.

R4405.5.2 Evaluation and acceptance concrete.

R4405.5.2.1 Frequency of testing.

R4405.5.2.1.1 The building official may require a reasonable number of tests to be made during the progress of the work, or may promulgate and set forth in writing such reasonable rules for requiring tests to be made by an approved laboratory as he may consider necessary to insure compliance with this code.

R4405.5.2.1.2 Not less than three specimens shall be made for each standard test.

R4405.5.2.1.3 Samples for strength of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 150 cubic yard (4.3 m^3) of concrete, nor less than once for each 5,000 square feet (465 m^2) of surface area for slabs or walls.

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R4405.5.2.1.4 On a given project, if total volume of concrete is such that frequency of testing required by Section R4405.5.2.1.1 would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.

R4405.5.2.1.5 Test cylinders taken on truck-mixed concrete shall be taken at the approximate one-quarter point of the load.

R4405.5.2.1.6 The age for strength tests shall be 28 days, or where specified, at the earlier age at which the concrete is to receive its full working load.

R4405.5.2.2 Laboratory cured specimens.

R4405.5.2.2.1 A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 28 days or at a test age designated for determination of f'_c.

R4405.5.2.2.2 Samples of strength tests shall be taken in accordance with the *Method of Sampling Fresh Concrete* , ASTM C 172, as set forth in Chapter 43.

R4405.5.2.2.3 Cylinders for strength tests shall be molded and laboratory cured in accordance with the *Method of Making and Curing Concrete Test Specimens in the Field* , ASTM C 31, as set forth in Chapter 43 of this code, and tested in accordance with the *Method of Test for Compressive Strength of Cylindrical Concrete Specimens* , ASTM C 39, as set forth in Chapter 43.

R4405.05.2.2.4 The strength level of an individual class of concrete shall be considered satisfactory if both of the following requirements are met:

1. Average of all sets of three consecutive strength tests equal or exceed f'_c.
2. No individual strength test (average of two cylinders) falls below f'_c by more than 500 psi (3448 kPa).

R4405.5.2.2.5 If any of the requirements of Section R4405.5.2 are not met, steps shall be taken to increase the average of subsequent strength test results. Requirements of Section R4405.5.2.4 shall be observed if any individual strength test falls below f'_c by more than 500 psi (3448 kPa).

R4405.5.2.3 Field cured specimens.

R4405.5.2.3.1 The building official may require strength tests of cylinders cured under field conditions to check adequacy of curing and protection of concrete in the structure.

R4405.5.2.3.2 Field-cured cylinders shall be cured under field conditions in accordance with Section 7.4 of the *Method of Making and Curing Concrete Test specimens in the Field*, ASTM C 31.

R4405.5.2.3.3 Field-cured test cylinders shall be molded at the same time and from the same samples as laboratory-cured test cylinders.

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R4405.5.2.3.4 Procedures for protecting and curing concrete shall be improved when the strength of field-cured cylinders at test age designated for determination of f'_c is less than 85 percent of that of companion laboratory-cured cylinders. The 85 percent may be waived if field-cured strength exceeds f'_c by more than 500 psi (3448 Pa).

R4405.5.2.4 Investigation of low-strength test results.

R4405.5.2.4.1 When there is a question as to the quality of the concrete in the structure, the building official may require core tests in accordance with the *Standard Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete*, ASTM C 42, as set forth in Chapter 43 of this code, or order load tests on that portion of the structure where the questionable concrete has been placed.

R4405.5.2.4.2 When concrete in structures has failed to meet the minimum standard, the building official shall order analysis and reports by a registered engineer to determine the adequacy of the structure.

R4405.5.2.4.3 If the likelihood of low-strength concrete is confirmed and computations indicate that load-carrying capacity may have been significantly reduced, tests of cores drilled from the area in question may be required in accordance with the *Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete*, ASTM C 42, as set forth in Chapter 43 of this code. In such case, three cores shall be taken for each strength test more than 500 psi (3448 kPa) below specified value of f'_c.

R4405.5.2.4.4 If concrete in the structure will be dry under service conditions, cores shall be air-dried at a temperature between 60°F and 80°F (16°C and 27°C) and a relative humidity less than 60 percent for seven days before testing and shall be tested dry. If concrete in the structure will be more than superficially wet under service conditions, cores shall be immersed in water for at least 40 hours and be tested wet.

R4405.5.2.4.5 Concrete in an area represented by core tests shall be considered structurally adequate if the average of three cores is equals to at least 85 percent of f'_c and if no single core is less than 75 percent of f'_c. To check testing accuracy, locations represented by erratic core strengths may be retested.

R4405.5.2.4.6 Slump considerations. The maximum allowable slump of concrete shall be 6 inches (152 mm). On the jobs controlled and supervised by a professional engineer, this maximum may be exceeded, but no concrete shall exceed the slump as indicated on the approved plans for proposed work.

SECTION R4405.6
HIGH-VELOCITY HURRICANE ZONES — MIXING AND PLACING CONCRETE

R4405.6.1 Preparation of equipment and place of deposit.

R4405.6.1.1 Preparation before concrete placement shall include the following:

1. All equipment for mixing and transporting concrete shall be clean.

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2. All debris shall be removed from the spaces to be occupied by the concrete.

3. Forms shall be properly coated.

4. Masonry filler units that will be in contact with concrete shall be well drenched.

5. Reinforcement shall be thoroughly cleaned of deleterious coatings.

6. Water shall be removed from place of deposit before concrete is placed unless a tremie is to be used or unless otherwise permitted by the professional engineer.

7. All laitance and other unsound material shall be removed before additional concrete is placed against hardened concrete.

R4405.6.2 Mixing.

R4405.6.2.1 All concrete shall be mixed until there is uniform distribution of materials and shall be discharged completely before the mixer is recharged.

R4405.6.2.2 Ready-mixed concrete shall be mixed and delivered in accordance with requirements of the *Specifications for Ready-Mixed Concrete* , ASTM C 94, or the *Specifications for Concrete* made by *Volumetric Batching and Continuous Mixing* , ASTM C 685, as set forth in Chapter 43 of this code.

R4405.6.2.3 Job-mixed concrete shall be mixed in accordance with the following:

1. Mixing shall be done in a batch mixer of approved type.

2. Mixer shall be rotated at a speed recommended by the manufacturer.

3. Mixing shall be continued for at least $1\frac{1}{2}$ minutes after all materials are in the drum, unless a shorter time is shown to be satisfactory by the mixing uniformity test of *Specification for Ready-Mixed Concrete* , ASTM C 94.

4. Materials handling, batching, and mixing shall conform to applicable provisions of the *Specifications for Ready-Mixed Concrete* , ASTM C 94.

5. A detailed record shall be kept to identify:

5.1 Number of batches produced.

5.2 Proportions of materials used.

5.3 Approximate location of final deposit in structure.

5.4 Time and date of mixing and placing.

R4405.6.3 Conveying.

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R4405.6.3.1 Concrete shall be conveyed from mixer to the place of final deposit by methods that will prevent separation or loss of the materials.

R4405.6.3.2 Conveying equipment shall be capable of providing a supply of concrete at the site of placement without separation of ingredients and without interruptions sufficient to permit loss of plasticity between successive increments.

R4405.6.4 Depositing.

R4405.6.4.1 Concrete shall be deposited as nearly as practicable in its final position to avoid segregation caused by re-handling or flowing.

R4405.6.4.2 Concreting shall be carried on at such a rate that concrete is at all times plastic and flows readily into the spaces between reinforcement.

R4405.6.4.3 Concrete that has partially hardened or been contaminated by foreign materials shall not be deposited in the structure.

R4405.6.4.4 Retempered concrete or concrete that has been remixed after initial set shall not be used unless approved by the building official.

R4405.6.4.5 After concreting is started, it shall be carried on as a continuous operation until placing of the panel or section, as defined by its boundaries or predetermined joints is completed except as permitted or prohibited by Section R4405.7.4.

R4405.6.4.6 Top surfaces of vertically formed lifts shall be generally level.

R4405.6.4.7 When construction joints are required, joints shall be made in accordance with Section R4405.7.4.

R405.6.4.8 All concrete shall be thoroughly consolidated by suitable means during placement and shall be thoroughly worked around the reinforcement and embedded fixtures and into corners of forms.

R4405.6.5 Curing.

R4405.6.5.1 Concrete, other than high-early-strength, shall be maintained in a moist condition for at least the first seven days after placement, except when cured in accordance with Section R4405.6.5.3.

R4405.6.5.2 High-early-strength concrete shall be maintained in a moist condition for at least the first three days, except when cured in accordance with Section R4405.6.5.3.

R4405.6.5.3 Accelerated curing:

1. Curing by high pressure steam, steam at atmospheric pressure, heat and moisture, or other accepted processes, may be employed to accelerate strength gain and reduce time of curing.

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2. Accelerated curing shall provide a compressive strength of the concrete at the load stage considered at least equal to required design strength at that load stage.

3. The curing process shall produce concrete with a durability at least equivalent to the curing method of Section R44405.6.5.3, Item 1 or 2.

4. Supplementary strength tests in accordance with Section R4405.5.2.3 may be required to assure that curing is satisfactory.

R4405.6.6 Bonding.

R4405.6.6.1 Before fresh concrete is deposited or placed on or against concrete which has hardened for 8 hours or longer, the forms shall be retightened, the surface of the hardened concrete shall be cleaned of all foreign matter and laitance, and dampened, but not saturated. Fresh concrete shall not be deposited or placed on or against hardened concrete so dampened before the surface is completely free of shiny spots indicating free moisture. When the concrete against which fresh concrete will be placed is less than 8 hours old, all laitance, loose particles and dirt shall be removed.

R4405.6.6.2 Where bonding of fresh to hardened concrete is necessary, construction joints and joints between footings and walls or columns, between walls or columns and beams or floors they support, and joints in unexposed walls shall be accomplished by reinforcement, dowels, adhesives, mechanical connectors or other approved methods. Hardened concrete at joints shall be dampened, but not saturated, immediately prior to the placement of fresh concrete.

SECTION R4405.7
HIGH-VELOCITY HURRICANE ZONES — FORMWORK, EMBEDDED PIPES AND CONSTRUCTION JOINTS

R4405.7.1 Design of formwork.

R4405.7.1.1 Forms shall be designed in accordance with ACI 347, *Recommended Practice for Concrete Formwork* .

R4405.7.1.2 Forms shall result in a final structure that conforms to shapes, lines and dimensions of the members as required by the design drawings and specifications.

R4405.7.1.3 Forms shall be substantial and sufficiently tight to prevent leakage of mortar.

R4405.7.1.4 Forms shall be properly braced or tied together to maintain position and shape.

R4405.7.1.5 Forms and their supports shall be designed so as not to damage previously placed structures.

R4405.7.1.6 Design of formwork shall include consideration of the rate and method of placing concrete; construction loads, including vertical, horizontal and impact loads; and

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special form requirements for construction of shells, folded plates, domes, architectural concrete or similar types of elements.

R4405.7.1.7 Forms for prestressed concrete members shall be designed and constructed to permit movement of the member without damage during application of prestressing force.

R4405.7.2 Removal of forms and shores.

R4405.7.2.1 No construction loads shall be supported on, nor any shoring removed from, any part of the structure under construction except when that portion of the structure in combination with the remaining forming and shoring system has sufficient strength to safely support its weight and loads placed thereon.

R4405.7.2.2 Sufficient strength shall be demonstrated by structural analysis considering proposed loads, strength of the forming and shoring system and concrete strength data. Concrete strength data may be based on tests of field-cured cylinders or, when approved by the building official, on other procedures to evaluate concrete strength. Structural analysis and concrete strength test data shall be furnished to the building official when so required.

R4405.7.2.3 No construction loads exceeding the combination of superimposed dead load plus specified live load shall be supported on any unshored portion of the structure under construction, unless analysis indicated adequate strength to support such additional loads.

R4405.7.2.4 Forms shall be removed in a manner that does not impair the safety and serviceability of the structure. All concrete to be exposed by form removal shall have sufficient strength not to be damaged thereby.

R4405.7.2.5 Form supports for prestressed concrete members may be removed when sufficient prestressing has been applied to enable prestressed members to carry their dead load and anticipated construction loads.

R4405.7.3 Conduits and pipes embedded in concrete.

R4405.7.3.1 Conduits, pipes and sleeves of any material not harmful to concrete, and with limitations of this section, may be embedded in concrete with approval of the professional engineer provided they are not considered to structurally replace the displaced concrete.

R4405.7.3.2 Conduits or pipes of aluminum shall not be embedded in structural concrete unless effectively coated or covered to prevent aluminum-concrete reaction or electrolytic action between aluminum and steel.

R4405.7.3.3 Conduits, pipes and sleeves passing through a slab, wall or beam shall not impair the strength of the construction.

R4405.7.3.4 Conduits and pipes, with their fittings, embedded within a column shall not displace more than 4 percent of the area of cross section on which strength is calculated or which is required for fire protection.

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R4405.7.3.5 Except when plans for conduits and pipes are approved by the professional engineer and other than those merely passing through, conduits and pipes embedded within a slab, wall or beam shall satisfy the following:

1. They shall not be larger in outside dimension than three-eighths of the overall thickness of slab, wall or beam in which they are embedded.

2. They shall not be spaced closer than three diameters or widths on center.

3. They shall not impair the strength of the construction.

R4405.7.3.6 Conduits, pipes and sleeves may be considered as replacing structurally in compression the displaced concrete, provided:

1. They are not exposed to rusting or other deterioration.

2. They are of uncoated or galvanized iron or steel not thinner than standard Schedule 40 steel pipe, and

3. They have a nominal inside diameter not over 2 inches (51 mm) and are spaced not less than three diameters on centers.

R4405.7.3.7 In addition to other requirements of Section R4405.7.3 pipes that will contain liquid, gas or vapor may be embedded in structural concrete under the following conditions:

1. Pipes and fittings shall be designed to resist effects of the material, pressure and temperature to which they will be subjected.

2. Temperature of liquid, gas or vapor shall not exceed 150°F (66°C).

3. Maximum pressure to which any piping or fittings shall be subjected shall not exceed 200 psi (1379 kPa) above atmospheric pressure.

4. All piping and fittings except as provided in Section R4405.7.3.5 shall be tested as a unit for leaks before concrete placement. Testing pressure above atmospheric pressure shall be 50 percent in excess of pressure to which piping and fittings may be subjected, but minimum testing pressure shall not be less than 150 psi (1034 kPa) above atmospheric pressure. Pressure test shall be held for 4 hours with no drop in pressure except that which may be caused by air temperature.

5. Drain pipes and other piping designed for pressures of not more than 1 psi (7 kPa) above atmospheric pressure need not be tested as required in Section R4405.7.3.7(4).

6. Pipes carrying liquid, gas or vapor that is explosive or injurious to health shall be tested again as specified in Section R4405.7.3.7(4) after concrete has hardened.

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7. No liquid, gas or vapor, except water not exceeding 90°F (32°C) nor 50 psi (350 kPa) pressure, shall be placed in the pipes until the concrete has attained its design strength.

8. In solid slabs the piping, unless it is for radiant heating, shall be placed between top and bottom reinforcement.

9. Concrete cover for pipes and fittings shall not be less than 1 1/2 inches (38 mm) for concrete exposed to earth or weather, nor 3/4 inch (19 mm) for concrete not exposed to weather or in contact with ground.

10. Reinforcement with an area not less than 0.002 times the area of concrete section shall be provided normal to the piping.

11. Piping and fittings shall be assembled by welding, brazing, solder sweating or other equally satisfactory methods. Screw connections shall not be permitted. Piping shall be so fabricated and installed that cutting, bending or displacement of reinforcement from its proper location will not be required.

R4405.7.4 Construction joints.

R4405.7.4.1 Surfaces of the concrete construction joints shall be cleaned and laitance removed.

R4405.7.4.2 Immediately before new concrete is placed, all construction joints shall be wetted and standing water removed.

R4405.7.4.3 Construction joints shall be so made and located as not to impair the strength of the structure. Provision shall be made for transfer of shear and other forces through construction joints.

R4405.7.4.4 Construction joints in floors shall be located near the middle of the spans of slabs, beams or girders, unless a beam intersects a girder at the middle location, in which case, joints in the girders shall be offset a distance approximately twice the width of the beam.

R4405.7.4.5 Beams, girders or slabs supported by columns or walls shall not be cast or erected until concrete in the vertical support members is no longer plastic.

R4405.7.4.6 Beams, girders, haunches, drop panels and capitals shall be placed monolithically as part of a slab system, unless otherwise shown on design drawing.

SECTION R4405.8
HIGH-VELOCITY HURRICANE ZONES — DETAILS OF REINFORCEMENT

R4405.8.1 Bending reinforcement.

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R4405.8.1.1 All reinforcement shall be bent cold, unless otherwise permitted by the professional engineer.

R4405.8.1.2 Reinforcement partially embedded in concrete shall not be field bent, except as shown on the design drawings or permitted by the professional engineer.

R4405.8.2 Surface conditions of reinforcement.

R4405.8.2.1 At the time concrete is placed, reinforcement shall be free from mud, oil or other nonmetallic coatings that adversely affect bonding capacity.

R4405.8.2.2 Steel reinforcement, except prestressing tendons, with rust, mill scale or a combination of both shall be considered satisfactory, provided the minimum dimensions, including the height of deformations and weight of a hand-wire-brushed test specimen, are not less than applicable ASTM specification requirements.

R4405.8.2.3 Prestressing tendons shall be clean and free of oil, dirt, scale, pitting and excessive rust. A light oxide is permissible.

R4405.8.3 Placing reinforcement.

R4405.8.3.1 Steel reinforcement shall be accurately placed and adequately secured in position by concrete or metal chairs or spacers or other acceptable methods. The minimum clear distance between parallel bars, except in columns, shall be equal to the nominal diameter of the bars. In no case shall the clear distance between bars be less than 1 inch (25 mm), or less than one and one-third times the maximum size of the coarse aggregate. When reinforcement in beams or girders is placed in two or more layers, the clear distance between layers shall not be less than 1 inch (25 mm) nor less than the diameter of the bars, and the bars in the upper layers shall be placed directly above those in the bottom layer.

R4405.8.3.2 Unless otherwise permitted by the building official and professional engineer, reinforcement, prestressing tendons and prestressing ducts shall be placed within the following tolerances:

1. Tolerance for depth, *d* , and minimum concrete cover in flexural members, walls and compression members shall be as follows, where d represents the distance from the extreme compression fiber to the centroid of the tension reinforcement:

	Tolerance on "d"	Tolerance on minimum concrete cover
d < 8 in.	+/- 3/8 in.	- 3/8 in.
d > 8 in.	+/- 1/2 in	- 1/2 in.

Exceptions:

a. Tolerance for the clear distance to formed soffits shall be minus ¼ inch (6.3 mm).

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b. Tolerance for cover shall not exceed minus one-third the minimum concrete cover required in the contract drawings nor less than 1 inch (25 mm) when exposed to weather.

2. Tolerance for longitudinal location of bends and ends of reinforcement shall be +2 inches (+102 mm) except at discontinuous ends of members where tolerance shall be + ½ inch (+12.7 mm).

R4405.8.3.3 Welded wire fabric with a wire size not greater than W5 or D5 used in slabs not exceeding 10 feet (3048 mm) in span may be curved from a point near the top of the slab over the support to a point near the bottom of the slab at midspan, provided such reinforcement is either continuous over, or securely anchored at, the support.

R4405.8.3.4 Welding of crossing bars shall not be permitted for assembly of reinforcement unless approved by the professional engineer of record.

R4405.8.3.5 Spacing limits and concrete cover for reinforcement shall be shown on the design drawings.

R4405.8.4 Splices in reinforcement.

R4405.8.4.1 In slabs, beams and girders, splices in reinforcement at points of maximum stress shall be avoided wherever possible. Such splices, where used, shall be welded, lapped or otherwise fully developed, but, in any case, shall transfer the entire stress from bar to bar without exceeding the allowable bond and shear stresses. The minimum overlap for a lapped splice shall be 24 bar diameters, but not less than 12 inches (25 mm) for bars and in accordance with Section 12.15 and 12.16 of ACI 318. The clear distance between bars shall also apply to the clear distance from a contact splice and adjacent splices or bars.

R4405.8.4.2 Reinforcement shall be spliced only as required or permitted on design drawings, or in specifications or as authorized by the licensed engineer of record.

R4405.8.4.3 Lap splices shall not be used for bars larger than #11 except as provided in ACI 318.

R4405.8.4.4 Lap splices of bundled bars shall be based on the lap splice length required for individual bars within a bundle, increased 20 percent for a 3-bar bundle and 33 percent for a 4-bar bundle. Individual bar splices within a bundle shall not overlap.

R4405.8.4.5 Bars spliced by noncontact lap splices in flexural members shall not be spaced transversely farther apart than one fifth the required lap splice length, nor 6 inches (152 mm).

R4405.8.4.6 Welded splices may be used, provided the metallurgical properties of the bars are suitable as determined by the licensed engineer of record in accordance with AWS D1.4.

R4405.8.4.7 End-bearing splices.

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R4405.8.4.7.1 In bars required for compression only, compressive stress may be transmitted by bearing of square cut ends held in concentric contact by a suitable device.

R4405.8.4.7.2 Bar ends shall terminate in flat surfaces within $1\frac{1}{2}$ degrees of a right angle to the axis of the bars and shall be fitted within 3 degrees of full bearing after assembly.

R4405.8.4.7.3 End bearing splices shall be used only in members containing closed ties, closed stirrups, or spirals.

R4405.8.4.8 Welded splices in reinforcing bars shall be by certified welders and shall comply with the Standard *Structural Welding Code-Reinforcing Steel*, AWS D1.4, as set forth in Chapter 43 of this code.

R4405.8.5 Concrete protection for reinforcement (non-prestressed).

R4405.8.5.1 The reinforcement of footings and other principal structural members in which the concrete is deposited against the ground shall have not less than 3 inches (76 mm) of concrete between it and the ground contact surface. If the concrete surfaces after removal of the forms are to be exposed to the weather or be in contact with the ground, the reinforcement shall be protected with not less than 2 inches (51 mm) of concrete for bars larger than No. 5 and 1 ½ inches (38 mm) for No. 5 bars or smaller except as set forth in Section R4406.8.5.5.

R4405.8.5.2 The concrete protective covering for reinforcement at surfaces not exposed directly to the ground or weather shall be not less than 3/4 inch (19 mm) for slabs and wall; and not less than 1 ½ inches (38 mm) for beams, girders and columns. In concrete ribbed floors in which the clear distance between ribs is not more than 30 inches (762 mm), the protection of reinforcement shall be at least 3/4 inch (19 mm).

R4405.8.5.3 Concrete protection for reinforcement shall in all cases be as least equal to the diameter of bars except for concrete slabs and joists as set forth herein.

R4405.8.5.4 Exposed reinforcement bars intended for bonding with future extensions shall be protected from corrosion by concrete or other adequate covering.

R4405.8.5.5 For exterior balcony slabs, slab surface shall be shall be sloped 1/8 unit in 12 units or greater to safeguard against ponding of water and slabs shall be designed and constructed in accordance with the provisions of ACI 318.

R4405.8.5.6 Concrete cover for cast in place, precast and prestressed concrete shall be in accordance with ACI 318 if not otherwise specified in this section. When this code requires a thickness of cover for fire protection greater than the minimum concrete specified in ACI 318, the greater thickness shall be used.

R4405.8.5.7 Exposed reinforcement, inserts and plates intended for bonding with future extensions shall be protected from corrosion.

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~~SECTION R4405.9~~
~~HIGH-VELOCITY HURRICANE ZONES — PRECAST CONCRETE UNITS~~

~~**R4405.9.1 General.**~~

~~**R4405.9.1.1** Precast concrete units shall comply with the minimum requirements set forth in this section, and the standard set forth in Section R4405.2.3.~~

~~**R4405.8.1.2** All precast concrete elements and their attachments (including embedments) to the main structural frame shall be designed by, and bear the seal of a Florida-registered architect or a Florida-registered engineer, which architect or engineer shall be proficient in structural design. The design shall be based on rational analysis for loads set forth in Section R4403. The architect/engineer of record may delegate this responsibility to a Florida-registered delegated engineer. In that case, shop drawings and design calculations prepared by such delegated engineer shall be reviewed and approved by the architect and the engineer of record.~~

~~**R4405.9.1.3** Only the material cast monolithically with the units at the time of manufacture shall be used in computing stresses unless adequate and approved shear transfer is provided.~~

~~**R4405.9.1.4** The building official may promulgate and set forth in writing such reasonable rules for requiring tests to be made by an approved laboratory as he may consider necessary to insure compliance with this code or uniformity of the products produced. The quantity of tests shall be based on consideration of safety or volume of output.~~

~~**R4405.9.1.5** The building official or his representative shall have free access to the plant of any producer at all hours of normal operation, and failure to permit such access shall be cause for revocation of approval.~~

~~**R4405.9.1.6** Failure of any product to satisfy in every respect the quality prescribed, or failure to conform with plans and specifications, shall be cause for rejection of the products.~~

~~**R4405.9.2 Statements of responsibilities of architects and professional engineers on design of structures using precast concrete components.**~~

~~**R4405.9.2.1** The structural construction documents shall indicate the configuration of precast components and shall include details of supports, anchors and connections for those components. Permit documents shall include sufficient details describing the attachment of precast units (including embedments) to the main structure.~~

~~**R4405.9.2.2** The precast permit documents shall bear the signature and seal of the professional architect or engineer charged with the responsibility of the design of the precast units. The architect or engineer of record may delegate this responsibility to a Florida-registered delegated engineer. In that case, shop drawings and design calculations prepared by such delegated engineer shall be reviewed and approved by~~

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~~the architect and/or the engineer of record as an indication that his intent has been understood and that the specified criteria have been used.~~

~~**R4405.9.2.3** The structural submittals shall include component details, calculations and fabrication and erection drawings. All such submittals shall identify the specific project.~~

~~**R4405.9.3 Aggregate.** The maximum size of the aggregate for precast units shall be not larger than one-third of the narrowest dimension between sides of the forms of the member in which the unit is cast nor larger than three-fourths of the minimum clear spacing between reinforcing bars and sides of the forms, except that where concrete is placed by means of high frequency vibration, the maximum size of the aggregate shall not be larger than one-half of the narrowest dimension between sides of the form.~~

~~**R4405.9.4 Strength of concrete.**~~

~~**R4405.9.4.1** Concrete for precast structural units made of crushed stone or other heavy aggregate shall have a compressive strength of not less than 2,500 psi (17 238 kPa) at 28 days.~~

~~**R4405.9.4.2** Concrete for precast units made of light weight aggregate concrete shall follow the general provisions of Section R4405.1.1.2 with consideration of the nature and limitations of the aggregate and the strength of the product.~~

~~**R4405.9.5 Workmanship.**~~

~~**R4405.9.5.1** The mix, the gradation of the aggregate and the workability shall be such as to insure complete filling of the form and continuous intimate bond between the concrete and all steel.~~

~~**R4405.9.5.2** Handling and conveying before curing shall be reduced to a minimum. Machinery for this purpose should be so designed that the unit will not be subject to bending or shock which would produce incipient cracks or broken edges or corners. Precast units shall not be freely transported or placed until the concrete is at least 14 days old, if made with regular cement, or at least seven days old, if made with Type III cement, or until its strength, as established by definite tests, is at least 60 percent of the required 28-day strength.~~

~~**R4405.9.5.3** The use of precast structural units not complying with ACI requirements or having visible cracks, honeycomb, exposed reinforcing except at ends or, with a compressive section dimension more than 1/8 inch (3.1 mm) less than specified dimension shall not be permitted.~~

~~**R4405.9.6 Curing.**~~

~~**R4405.9.6.1** No precast structural unit shall be removed from the form until the concrete has attained a compressive strength of 50 percent of the 28-day design strength but not less than 1,250 psi (8619 kPa) as verified by representative tests.~~

~~**R4405.9.6.2** Curing by high pressure steam, steam vapor or other accepted processes may be employed to accelerate the hardening of the concrete and to reduce the time of curing.~~

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R4405.9.6.3 To ensure the eventual placement of the units in the structure without damage, the handling shall be done in such a manner that bending shall be reduced to a minimum or prevented.

R4405.9.7 Identification and marking. All joists, beams, girders and other units shall show some mark plainly indicating the top of the unit. This mark or symbol shall indicate the manufacturer, the date of manufacture and the length, size and type of reinforcing.

R4405.9.8 Cutting of holes. No openings or channels not provided for in the structural design shall be made on the job without the specific approval of the professional engineer in accordance with his written, detailed instructions covering such work.

R4405.9.9 Anchorage. Anchorage of all precast concrete units shall be designed, based on rational analysis, to transmit loads and other forces to the structural frame.

R4405.9.10 Bridging. Joists shall be secured against lateral displacement by cast in place bridging, and such bridging shall be spaced not to exceed 32 times the width of the compression flange of the joist except that for roof systems, cast in place Portland concrete slabs embedding the top flanges not less than ½ inch (13 mm), or steel inserts cast in the joist heads to which bulb-tees supporting gypsum decks are welded, shall be accepted in lieu of bridging.

R4405.9.11 Connections. All joints and connections will perform their function at all stages of loading without overstress and with proper safety factors against failure caused by overload. Loading conditions to be considered in the design of joints and connections are service loads, including wind forces, volume changes resulting from shrinkage, creep, and temperature change, reaction loads, and loading encountered in stripping forms, shoring and removal of shores, storage and transportation of members.

R4405.9.12 Inspections.

R4405.9.12.1 All structural precast units shall be inspected for quality control by an architect or professional engineer qualified to perform these inspections prior to the concrete placement at the casting yard.

R4405.9.12.2 All structural precast units and their attachments to the main structure shall be inspected after erection, but before concealment. Such inspections shall be performed by a Florida registered architect or licensed engineer.

SECTION R4405.10
HIGH-VELOCITY HURRICANE ZONES — PRESTRESSED CONCRETE

R4405.10.1 Prestressed concrete, as defined in Section R4405.3, shall comply with this section.

R4405.10.1.1 All prestressed structural items shall be designed by a registered licensed engineer. Openings or channels not provided for in the structural design shall not be made on the job without the specific approval of the design licensed engineer.

R4405.10.1.2 The building official may promulgate and set forth in writing such reasonable rules for requiring tests to be made by an approved laboratory as he may

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~~consider necessary to insure compliance with this code or uniformity of the products produced.~~

~~**R4405.10.1.3** The building official or his or her representative shall have free access to the plant of any producer at all hours of normal operation. Failure to permit such access shall be cause for revocation of approval.~~

~~**R4405.10.1.4** Failure of any product to satisfy the quality prescribed or failure to conform to plans and specifications shall be cause for rejection of the product.~~

~~**R4405.10.2 Statements of responsibilities of architects and professional engineers on design of cast-in-place post-tensioned concrete structural systems.**~~

~~**R4405.10.2.1** The structural construction documents shall show the magnitude and location of all prestressing forces and all design assumptions.~~

~~**R4405.10.2.2** The structural engineer of record and/or the architect of record shall require the submission of calculations and installation drawings from a specialty engineer for post tensioning systems for review by the structural engineer of record and/or the architect of record. Review is an indication that his or her intent has been understood and that the specified criteria have been used. The installation drawings shall provide full details of materials to be used including necessary accessories and instructions for construction and shall identify the specific project and shall bear the impressed seal, signature and date of the specialty engineer who prepared them.~~

~~**R4405.10.2.3** It is the responsibility of the structural engineer of record and/or the architect of record to review the post-tensioning system installation drawings so that the drawings are coordinated with the reinforcing steel shop drawings.~~

~~**R4405.10.2.4** Determining the effect of post tensioning on other parts of the building is the responsibility of the structural engineer of record and/or the architect of record.~~

~~**R4405.10.3 Design and construction.**~~

~~**R4405.10.3.1** Design and construction shall be in accordance with Chapter 18 of ACI 318.~~

~~**R4405.10.3.2** Calcium chloride shall not be used in concrete for prestressed members.~~

~~**R4405.10.4 Tendon and anchorage zones.**~~

~~**R4405.10.4.1** Reinforcement shall be provided where required in tendon anchorage zones to resist bursting, splitting, and spalling forces induced by tendon anchorage. Regions of abrupt change in section shall be adequately reinforced.~~

~~**R4405.10.4.2** End blocks shall be provided where required for support bearing or for distribution of concentrated prestressing forces.~~

~~**R4405.10.4.3** Post-tensioning anchorage and supporting concrete shall be designed to resist maximum jacking force for strength of concrete at time of prestressing.~~

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R4405.10.4.4 Post-tensioning anchorage zones shall be designed to develop the guaranteed ultimate tensile strength of prestressing tendons using a strength reduction factor of 0.90 for concrete.

R4405.10.5 Corrosion protection for unbonded prestressing tendons.

R4405.10.5.1 Unbonded tendons shall be completely coated with suitable material to ensure corrosion protection.

R4405.10.5.2 Tendon wrapping shall be continuous over the entire length to be unbonded, and shall prevent intrusion of cement paste or loss of coating materials during concrete placement.

R4405.10.6 Post-tensioning ducts.

R4405.10.6.1 Ducts for grouted or unbonded tendons shall be mortar-tight and nonreactive with concrete, tendons or filler material.

R4405.10.6.2 Ducts for grouted single wire, strand or bar tendons shall have an inside diameter at least ¼ inch (6.3 mm) larger than tendon diameter.

R4405.10.6.3 Ducts for grouted multiple wire, strand or bar tendons shall have an inside cross-sectional area at least two times the net area of the tendons.

R4405.10.7 Grout for prestressing tendons.

R4405.10.7.1 Grout shall consist of Portland cement and water; or Portland cement, sand and water.

R4405.10.7.2 Materials for grout shall conform as specified in ACI 318 and be as follows:

1. Portland cement.
2. Water content shall be minimum necessary for proper pumping of grout; however, water-cement ratio shall not exceed 0.45 by weight.
3. Sand, if used, shall conform to *Standard Specifications for Aggregate for Masonry Mortar* , ASTM C 144, except that gradation may be modified as necessary to obtain satisfactory workability.
4. Admixtures conforming to ACI 318 and known to have no injurious effects on grout, steel or concrete may be used. Calcium chloride shall not be used.
5. Water shall not be added to increase grout flow ability that has been decreased by delayed use of grout.
6. Grout temperatures shall not be above 90°F (32°C) during mixing and pumping.

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R4405.10.8 Protection for prestressing tendons. Burning or welding operations in the vicinity of prestressing tendons shall be carefully performed, so that tendons are not subject to excessive temperatures, welding sparks or ground currents.

R4405.10.9 Application and measurement of prestressing force.

R4405.10.9.1 Prestressing force shall be determined by both of the following methods and the cause of any difference in force determination that exceeds 5 percent shall be ascertained and corrected.

1. Measurement of tendon elongation. Required elongation shall be determined from average load-elongation curves for prestressing tendons used.

2. Observation of jacking force on a calibrated gauge or load cell or by use of a calibrated dynamometer.

R4405.10.9.2 Where transfer of force from bulkheads or pretensioning bed to concrete is accomplished by flame cutting prestressing tendons, cutting points and cutting sequence shall be predetermined to avoid undesired temporary stresses.

R4405.10.9.3 Long lengths of exposed pretensioned strand shall be cut near the member to minimize shock to concrete.

R4405.10.9.4 Total loss of prestress as a result of un-replaced broken tendons shall not exceed 2 percent of total prestress.

R4405.10.10 Post-tensioning anchorages and couplers.

R4405.10.10.1 Couplers shall be placed in areas approved by the licenced engineer and enclosed in housing long enough to permit necessary movements.

R4405.10.10.2 In unbonded construction subject to repetitive loads, special attention shall be given to the possibility of fatigue in anchorages and couplers.

R4405.10.10.3 Anchorage and end fittings shall be permanently protected against corrosion.

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SECTION R4405.11
HIGH-VELOCITY HURRICANE ZONES — PNEUMATICALLY PLACED CONCRETE (SHOTCRETE)

R4405.11.1 General.

R4405.11.1.1 Pneumatically placed concrete is a proportioned combination of fine aggregate Portland cement and water which, after mixing, is pneumatically projected by air directly onto the surface to which it is to be applied.

R4405.11.1.2 Pneumatically placed concrete shall conform to all requirements of Specifications for Materials, Proportioning and Application of Shotcrete, ACI 506.2 published by the American Concrete Institute, except as modified herein.

R4405.11.1.3 Pneumatically placed concrete shall be composed of Portland cement, aggregate and water proportioned to produce a concrete suitable for pneumatic application.

R4405.11.1.4 Concrete ingredients shall be selected and proportioned in a manner that will produce concrete which will be extremely strong, dense and resistant to weathering and abrasion.

R4405.11.2 Sampling and testing cement and aggregate. The contractor shall determine the source, kind and quality of the cement and aggregates to be used in the work well in advance of the time scheduled for starting the work and when so directed by the building official shall submit such information for approval before starting shotcrete operation.

R4405.11.3 Surface preparation. To ensure adequate bond, the newly chipped and sandblasted surface shall be thoroughly moistened with water prior to application of shotcrete. In no instance shall shotcrete be applied in an area where free running water exists.

R4405.11.4 Proportioning. Prior to the start of shotcreting, the contractor shall submit to the licensed engineer the recommended mix as a ratio of cement to aggregate. The recommended mix shall be on the basis of test data from prior experience.

R4405.11.5 Mixing.

R4405.11.5.1 Shotcrete shall be thoroughly mixed by machine and then passed through a sieve to remove all large particles before placing in the hopper of the cement gun. The mixture shall not be permitted to become damp. Each batch should be entirely discharged before recharging is begun. The mixer should be cleaned thoroughly enough to remove all adherent materials from the mixing vanes and from the drum at regular intervals.

R4405.11.5.2 Water in any amount shall not be added to the mix before it enters the cement gun. Quantities of water shall be controlled by a valve at the nozzle of the gun. Water content shall be adjusted as required for proper placement, but shall in no case exceed 4 gallons (15 L) of water per sack of cement, including the water contained in the aggregate.

R4405.11.5.3 Remixing or tempering shall not be permitted. Mixed material that has stood 45 minutes without being used shall be discarded. Rebound materials shall not be reused.

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R4405.11.6 Application.

R4405.11.6.1 In shooting walls and columns, application shall begin at the bottom and the first coat shall completely embed the reinforcement to the form.

R4405.11.6.2 In shooting beams, application shall begin at the bottom and a surface at right angles to the nozzle shall be maintained.

R4405.11.6.3 In shooting slabs, the nozzle shall be held at a slight angle to the work so that rebound is blown on to the finished portion where it shall be removed.

R4405.11.6.4 Corners shall be filled first. "Shooting" shall be from an angle as near perpendicular to the surface as practicable, with the nozzle held approximately 3 feet (915 mm) from the work, except in confined control. If the flow of material at the nozzle is not uniform and slugs, sand spots or wet sloughs result, the nozzleman shall direct the nozzle away from the work until the faulty conditions are corrected. Such defects shall be replaced as the work progresses.

R4405.11.6.5 Shotcreting shall be suspended if:

1. Air velocity separates the cement from the sand at the nozzle.
2. Temperature approaches freezing and the newly placed shotcrete cannot be protected.

R4405.11.6.6 The time interval between successive layers in sloping, vertical or overhanging work must be sufficient to allow initial but not final set to develop. At the time the initial set is developing, the surface shall be cleaned to remove the thin film of laitance in order to provide a good bond with succeeding applications.

R4405.11.7 Construction joints. Construction joints or day's work joints shall be sloped off to a thin, clean, regular edge, preferably at a 45 degree (0.78 rad) slope. Before placing the adjoining work, the slope portion and adjacent shotcrete shall be thoroughly cleaned as necessary, then moistened and scoured with an air jet.

R4405.11.8 Curing and protection.

R4405.11.8.1 Curing shall be in accordance with ACI 506.2 depending upon atmospheric condition.

R4405.11.8.2 Immediately after placement, shotcrete shall be maintained in a moist condition for at least the first 24 hours.

R4405.11.8.3 Final curing shall continue for seven days after placement if Type I Portland cement is used, or for three days if high early strength Type III Portland cement is used, or until the specified strength is attained. Final curing may consist of the initial curing process or an approved moisture-retaining covering.

R4405.11.8.4 Natural curing may be used when relative humidity remains above 85 percent when approved by the licensed engineer of record.

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SECTION R4405.12
HIGH-VELOCITY HURRICANE ZONES — LIGHTWEIGHT INSULATING CONCRETE FILL

R4405.12.1 Lightweight insulating concrete fill. Material produced with or without aggregate additions to Portland cement, water and air to form a hardened material possessing insulating qualities, which, when oven dried shall have a unit weight no greater than 50 pcf (801 kg/m^3).

R4405.12.1.1 Aggregate lightweight insulating concrete. Insulating concrete fill formulated predominantly with perlite, vermiculite or expanded polystyrene beads. It shall have a minimum compressive strength of 125 psi (861.8 kPa) when tested in compliance with ASTM C 495 and C 796.

R4405.12.1.2 Cellular lightweight insulating concrete. Insulating concrete fill formulated by mixing a hydrated cementitious matrix around non interconnecting air cells created by the addition of foam concentrates formed from hydrolyzed proteins or synthetic surfactants. The cured cellular lightweight insulating concrete shall have minimum compressive strength of 160 psi (1103 kPa) when tested in compliance with ASTM C 495 and C 796.

R4405.12.1.3 Cellular/aggregate (Hybrid) lightweight insulating concrete. Insulated concrete fill formulated by combining foam concentrates with low density aggregates to import properties of both aggregate and cellular lightweight insulating fill. It shall have a minimum compressive strength of 200 psi (1379 kPa) when tested in compliance with ASTM C 495 and C 796.

R4405.12.1.4 Walkability. A term defining the ability of lightweight insulating fill to withstand anticipated construction traffic during the roof membrane application without significant indentations in the lightweight insulating concrete fill surface.

R4405.12.2 Inspection.

R4405.12.2.1 Application of all lightweight insulating concrete fill roof decks shall be by applicators approved by the lightweight insulating concrete deck manufacturer. Product Approval shall be required for all lightweight insulation concrete fill systems.

R4405.12.2.2 The permit holder shall notify the building official 48 hours prior to the pouring of lightweight insulating concrete fill.

R4405.12.2.3 The permit holder shall make available to the building official a job log with the following minimum items.

1. Cast density recordings/hour
2. Product evaluation for application
3. Date and job locations identified
4. Results of any field test conducted.

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R4405.12.2.4 The building official shall have clear access and clear path at his option for a walkability inspection of lightweight insulating concrete fill 24 hours after placement.

R4405.12.3 Testing. The building official may require tests of the lightweight insulating concrete fill to confirm the fastener withdrawal resistance, compressive strength or drainage ability.

R4405.12.3.1 Existing roof assemblies to receive lightweight insulating concrete fill other than galvanized G-90 steel deck or structural concrete deck shall be tested for uplift for adhesion to the substrate to confirm compliance with design pressure.

R4405.12.4 Materials and limitations of use. Lightweight insulating concrete fill, in conjunction with galvanized formed steel sheets, shall not be used as a roof deck in areas where highly corrosive chemicals are used or stored.

R4405.12.4.1 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. No lightweight insulating concrete shall be poured over a painted or non-galvanized steel deck.

1. Lightweight insulating concrete fill over structural concrete slabs, twin tees, precast units or other non venting substrates shall be vented, to allow the escape of excess moisture

R4405.12.4.2 Minimum thickness of lightweight insulating concrete fill shall be 2 inches (51 mm) over the top plane of the substrate unless otherwise specified in the Product Approval. In all cases, lightweight insulating concrete shall be of sufficient thickness to receive the specific base ply fastener throughout the roof deck.

R4405.12.4.3 Minimum compressive strength at 28 days shall be as follows:

1. Aggregate concrete 125 psi (5985 Pa).
2. Cellular type: nailed base sheet 160 psi (7661 Pa).
3. Cellular type: adhered membrane systems 250 psi (11 970 Pa).

R4405.12.4.4 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.

R4405.12.4.5 Chemical admixtures shall be in compliance with ASTM C 494. Calcium chloride or any admixture containing chloride salts shall not be used in insulating concrete. Fiber reinforcement may be used to control cracking. Mineral admixtures shall conform to ASTM C 618.

R4405.12.4.6 Vermiculite or perlite shall be in compliance with ASTM C 332, Group I. Foam concentrates shall be in compliance with ASTM C 796 and ASTM C 869.

R4405.12.4.7 Mixing, placing and finishing shall be in compliance with the deck system Product Approval. Slurry coating, two-density casting and double casting shall be acceptable per the specific manufacturer's recommendations.

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R4405.12.4.8 If the lightweight insulating concrete deck is to receive Product Approval for a direct adhered roofing system, the deck surface shall be prepared to the requirements set forth in the roof system Product Approval.

R4405.12.4.9 All base ply fasteners for use in lightweight insulating concrete roof decks shall have a Product Approval for use with the specific lightweight insulating concrete roof system in compliance with manufacturer's recommendations and the design pressure of Section R4403.

R4405.12.4.10 The lightweight insulating concrete fill fastener withdrawal shall have a minimum resistance for new pours of:

1. 60 pounds (267 N) in 28 days when the fastener is installed and allowed to age in the concrete.
2. 40 pounds (178 N) at time of roofing.

R4405.12.4.11 Lightweight insulating concrete fill system expansion joint shall be provided at the following locations:

1. Where expansion or contraction joints are provided in the structural assembly.
2. Where steel framing, structural steel, or decking change direction.
3. Where separate wings of "L," "U," "T" or similar configurations exist.
4. Where the type of decking changes (for example, where a precast concrete deck and a steel deck abut).
5. Whenever additions are connected to existing buildings.
6. At junctions where interior heating conditions change.
7. Wherever differential movement between vertical walls and the roof deck may occur.

R4405.12.4.12 Insulation board with lightweight insulating concrete fill shall conform to Type I expanded polystyrene insulation as defined in ASTM C 578. 1. Installation of insulating board in conjunction with lightweight insulating concrete shall comply with uplift requirements set forth in Section R4403. Insulation panels shall be placed in a minimum $+/_{8}$ inch (3.2 mm) slurry bed of insulating concrete while the material is still in a plastic state and shall be covered with insulating concrete within the same work day of placement of the insulating panel. The minimum 2 inch (51 mm) continuous pour is required so as not to compromise the diagram design. Insulation panels shall be provided with holes and/or slots for keying and/or slots for venting.

R4405.12.4.13 Reinforcing mesh shall be provided when necessary to meet fire rating and/or special structural design requirements. Refer to a specific Product Approval for the specific requirements applicable to the product being installed.

1. Fibers may be added where control of plastic shrinkage and cracking is required. Refer to the Product Approval for the specific requirements applicable to the product being installed.

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S5013

Date Submitted	7/9/2012	**Section**	4406	**Proponent**	Michael Goolsby
Chapter	44	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Eliminating unnecessary duplication of Chapter 44 HVHZ provisions

Rationale

Since the inception of the FBC, the content of Chapter 44 of the FBC, R has been a duplication of the sections contained in the FBC, Building volume. This proposed modification is intended to maintain the continuation of the current level of safety for the protection of life and property unchanged. Importantly, the proposed modification eliminates the need to unnecessarily duplicate more than one-hundred pages into the FBC, R volume, thereby reducing the size of the text contained in the FBC. Additionally, the proposed modification prevents the need to replace all of the non-wind related sections which were removed by legislative directive with dozens of individual modifications, each requiring review and approval; this process would otherwise be unavoidable in order to create a crucial integration of applicable and relevant building code sections into Chapter 44 requirements. In short, this proposed modification is a simplified approach resulting in identical code requirements but through a less time consuming, less complicated and less duplicative process.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to building and property owners relative to cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

It does so by ensuring direction to applicable sections of the code are provided.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

It does so by eliminating the need to unnecessarily duplicate building code provisions and affects a reduction in the number of code pages to be compiled, reviewed, edited and printed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification does not curtail the use of any material, products, methods or systems of construction already deemed acceptable by the Florida Building Code or any alternate materials, design and methods of construction and equipment acceptable to the code official.

Does not degrade the effectiveness of the code

This modification does not degrade the effectiveness of the code; instead, it maintains the applicability of relevant base code requirements as has been the case since the first edition of the Florida Building Code.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5013-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

Creates a reference to Chapter 20 of the FBC-B. The FBC-R was created to be a free standing document and as such should include the language if it meets the criteria for a Florida specific amendment.

S5013 Text Modification

Page: 1

SECTION 4406

HIGH-VELOCITY HURRICANE ZONES — LIGHT METAL ALLOYS

R4406.1 ~~Aluminum~~ Refer to Chapter 20 of the Florida Building Code, Building.

~~**R4406.1.1 Design.** Aluminum members shall be designed by methods admitting of rational analysis according to established principles of mechanics.~~

~~**R4406.1.2 Standards.** The following standards are hereby adopted as set forth in Chapter 43:~~

~~1. Specifications for Aluminum Structures, The Aluminum Association, Inc.~~

~~2. The Aluminum Formed Sheet Building Sheathing Design Guide, The Aluminum Association, Inc.~~

~~3. The Commentary on Specifications for Aluminum Structures, The Aluminum Association, Inc.~~

~~4. Engineering Data for Aluminum Structures, The Aluminum Association, Inc.~~

~~5. Guidelines for Structural Condition Assessment of Existing Buildings, ANSI/ASCE 11.~~

~~**R4406.1.3 Workmanship.** Aluminum construction shall be in conformance with the tolerances, quality and methods of construction as set forth in Section R4406.1.2 and the American Welding Society's Structural Welding Code-Aluminum (D1.2).~~

~~**R4406.1.6 Allowable unit stresses.**~~

~~**R4406.1.6.1** The design, fabrication and assembly of aluminum members for building and other structures shall conform to the standard set forth in Section R4406.1.2 and as otherwise set forth herein.~~

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~~**R4406.1.6.3** Aluminum members shall be limited by the deflections set forth in Section R4403.2.~~

~~**R4406.1.7** The building official may require that any structure using aluminum primary or secondary members be designed by a Florida licensed professional engineer.~~

~~**R4406.1.7.1** Increases in allowable unit stresses as set forth for wind loads in Section R4403.2 shall be applicable to aluminum structural members except that allowable unit stresses thus increased shall not exceed 75 percent of the minimum yield strength.~~

~~**Exception:** No increase in allowable stresses caused by wind loads shall be permitted for aluminum sheet decking, siding and cladding.~~

~~**R4406.1.7.2** In addition to flexural and shearing stresses, the critical factors of buckling, fatigue, stress raisers such as notches or holes or shape reentrant corners, deflection and connections shall be considered and provided for by proper design.~~

~~**R4406.1.7.3** All solid roof systems shall be designed for a minimum 30 psf (1436 Pa) live load.~~

~~**R4406.1.7.4** All buildings and structures shall be designed to resist uplift. In the case of placement on existing slabs and foundations, sufficient information and calculations shall be provided by the professional engineer and/or architect to verify the ability of the slab or foundation to resist uplift loads.~~

~~**R4406.1.7.5** All connection devices shall be rated by load testing by an approved testing laboratory.~~

~~**R4406.1.7.5.1** All expansion anchors shall not be installed less than 3 inches (76 mm) from the edge of concrete slab and/or footings. All expansion anchors shall develop an ultimate withdrawal resisting force equal to four times the imposed load, with no stress increase for duration of load.~~

~~**R4406.1.8** Fabrication and construction details.~~

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~~**R4406.1.8.1 Connections.** Aluminum members shall be designed as set forth in the standards in Section R4406.1.2.~~

~~**R4406.1.8.1.1 Fasteners.** Bolts and other fasteners shall be aluminum, stainless steel, hot-dip or electro-galvanized steel. Double cadmium-plated steel bolts may also be used.~~

~~**R4406.1.8.1.3 Welding.** Aluminum parts shall be welded with an inert-gas-shielded arc or resistance welding process. No welding process that requires a welding flux shall be used. Filler alloys complying with the requirements of the standard in this section shall be used.~~

~~**R4406.1.8.1.4 Welder qualifications.** All welding of structural aluminum member shall be performed by certified welders.~~

~~**R4406.1.8.1.5 Erection.** During erection, structural aluminum shall be adequately braced and fastened to resist dead, wind and erection loads.~~

~~**R4406.1.8.2 Structural aluminum decking and siding.**~~

~~**R4406.1.8.2.1** Aluminum sections spanning between supports shall be limited in span to satisfactorily support the positive and negative loads set forth in Section R4403.2. The deflection of decking shall not exceed that set forth in Section R4403.2.~~

~~**R4406.1.8.2.2** Aluminum sheet used for roof decking or siding shall be not less than 0.032 inch (0.8 mm) in thickness.~~

~~**R4406.1.8.2.3** Aluminum sheets shall be secured to the supports to adequately resist positive and negative loads. Attachments shall be at intervals not exceeding 8 inches (203 mm) o.c. and shall be secured to each other at side laps at intervals as required by rational analysis and/or tests, but shall not exceed 12 inches (305 mm) o.c.~~

~~**R4406.1.8.2.4** Fasteners shall have a head, and/or be provided with washers not less than 1/2 inch (13 mm) in diameter.~~

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~~**R4406.1.8.2.5** Fasteners located at end laps shall be placed not more than 2 inches (51 mm) nor less than 1 inch (25 mm) from the end of overlapping sheets.~~

~~**R4406.1.8.2.6** Where roof or wall cladding is of aluminum, an approved membrane to protect against water intrusion to the interior shall be provided or the aluminum cladding shall be designed and constructed with an approved continuous edge-interlock, overlap or seam to prevent water intrusion.~~

~~**R4406.1.8.3 Nonstructural aluminum decking and siding.**~~

~~**R4406.1.8.3.1** Nonstructural aluminum sheets shall be backed with cladding as set forth in Section R4409 and Section R4410.~~

~~**R4406.1.8.3.2** Nonstructural aluminum sheets shall have a minimum thickness of 0.032 inches (0.8 mm).~~

~~**R4406.1.8.3.4** Nonstructural decking and siding shall be attached as set forth in Section R4406.1.8.2 except that the attachment of aluminum residential siding shall be by rational analysis and/or tests using a minimum 0.120-inch (3 mm) diameter aluminum nails of sufficient length to penetrate studs a minimum of 2 inches (51 mm). Nails at wood studs shall be as required by rational analysis and/or tests, but spaced not greater than 24 inches (610 mm) o.c. horizontally and no greater than 8 inches (203 mm) o.c. vertically.~~

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Date Submitted	7/9/2012	**Section**	4407	**Proponent**	Michael Goolsby
Chapter	44	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Eliminating unnecessary duplication of Chapter 44 HVHZ provisions

Rationale

Since the inception of the FBC, the content of Chapter 44 of the FBC, R has been a duplication of the sections contained in the FBC, Building volume. This proposed modification is intended to maintain the continuation of the current level of safety for the protection of life and property unchanged. Importantly, the proposed modification eliminates the need to unnecessarily duplicate more than one-hundred pages into the FBC, R volume, thereby reducing the size of the text contained in the FBC. Additionally, the proposed modification prevents the need to replace all of the non-wind related sections which were removed by legislative directive with dozens of individual modifications, each requiring review and approval; this process would otherwise be unavoidable in order to create a crucial integration of applicable and relevant building code sections into Chapter 44 requirements. In short, this proposed modification is a simplified approach resulting in identical code requirements but through a less time consuming, less complicated and less duplicative process.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to building and property owners relative to cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

It does so by ensuring direction to applicable sections of the code are provided.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

It does so by eliminating the need to unnecessarily duplicate building code provisions and affects a reduction in the number of code pages to be compiled, reviewed, edited and printed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification does not curtail the use of any material, products, methods or systems of construction already deemed acceptable by the Florida Building Code or any alternate materials, design and methods of construction and equipment acceptable to the code official.

Does not degrade the effectiveness of the code

This modification does not degrade the effectiveness of the code; instead, it maintains the applicability of relevant base code requirements as has been the case since the first edition of the Florida Building Code.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5014-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

Creates a reference to Chapter 21 of the FBC-B. The FBC-R was created to be a free standing document and as such should include the language if it meets the criteria for a Florida specific amendment.

S5014 Text Modification

Page: 1

SECTION 4407

HIGH-VELOCITY HURRICANE ZONES — MASONRY

R4407.1 ~~Masonry shall be designed by a method admitting of rational analysis based on established principles of mechanics~~ Refer to Chapter 21 of the Florida Building Code, Building.

~~**SECTION R4407.2**~~

~~**HIGH-VELOCITY HURRICANE ZONES — QUALITY, TESTS, AND APPROVALS**~~

~~**R4407.2.1 Quality.** The quality of materials assembled into masonry and the method and manner of their assembly shall conform to the requirements of this section.~~

~~**R4407.2.1.1 Workmanship.** Masonry construction shall be in conformance with the tolerances, quality and methods of construction as set forth in standards referenced in this section; the Portland Cement Association Concrete Masonry Handbook , ANSI A41.1, A41.2 and AWS Structural Welding Code: Reinforcing Steel (D1.4).~~

~~**R4407.2.1.2 Other materials.** A material of masonry, other than set forth herein, which is incombustible and otherwise sufficiently embodies the characteristics and satisfies the requirements of one of the materials herein may be approved by the building official, subject to such tests as may be prescribed.~~

~~**R4407.2.2 Tests.**~~

~~**R4407.2.2.1** The building official may require materials to be subjected to tests to determine their quality whenever there is reason to believe that a material is no longer up to the standards on which the approval was based. The cost of such tests shall be borne by the person or persons proposing to use or continue to use such material or product.~~

~~**R4407.2.2.2** Materials shall be tested in accordance with the standard specifications of the ASTM International (ASTM) as such standard specifications are noted in this section.~~

~~**R4407.2.3 Approvals.**~~

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~~**R4407.2.3.1** Only such masonry units as bear the approval of the building official and are manufactured or fabricated by plants having a certificate of competency issued by the authority having jurisdiction, shall be considered acceptable for the construction of buildings or other structures.~~

~~**R4407.2.3.2** Approval of masonry units and manufacturing or fabricating plants shall be for periods not to exceed one year and may be obtained upon application and the submission of certificates of tests in accordance with the provisions of this section.~~

~~**R4407.2.3.3** The provisions for tests for approval of masonry units shall not be construed as in lieu of any tests otherwise required under this section.~~

~~**R4407.2.3.4** Failure of a manufacturer of masonry units to obtain approval or to submit tests as required in this section, or such additional tests as the building official may require, shall be cause for rejection of such masonry units.~~

~~**R4407.2.4 Brick.**~~

~~**R4407.2.4.1 General.** Brick shall include masonry units usually 21/4 inches (57 mm) thick, 33/4 inches (95 mm) wide, and 8 inches (203 mm) long, and not less than 75 percent solid.~~

~~**R4407.2.4.2 Tests.** Tests shall be conducted in accordance with Standard Methods of Testing Brick, ASTM C 67.~~

~~**R4407.2.4.3 Quality.**~~

~~**R4407.2.4.3.1** Burned clay or shale brick shall conform to either the standard Specification for Building Brick (Solid Masonry Units made from Clay or Shale), ASTM C 62, the Standard Specification for Facing Brick (Solid Masonry Units made from Clay or Shale), ASTM C 216 or the Standard Specification for Hollow Brick (Hollow Masonry Units made from Clay or Shale), ASTM C 652.~~

~~**R4407.2.4.3.2** Sand lime brick shall conform to the Standard Specification for Concrete Building Brick, ASTM C 55.~~

~~**R4407.2.4.3.3** Concrete brick shall conform to the Standard Specification for Concrete Building Brick, ASTM C 55.~~

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~~**R4407.2.5 Stone.** Stone for masonry shall be hard and durable.~~

~~**R4407.2.6 Cast stone.** Cast stone shall be made of Portland cement, aggregates and water with or without admixtures. Cast stone for load-bearing masonry or where exposed to the weather shall have an average compressive strength, at 28 days, of at least 3,000 psi (20.7 MPa) and shall have not more than 7 percent water absorption by weight.~~

~~**R4407.2.7 Concrete blocks.**~~

~~**R4407.2.7.1 General.**~~

~~**R4407.2.7.1.1** Concrete blocks shall be made of Portland cement, water and approved aggregates. The materials shall conform to the requirements for the materials of concrete specified in Section R4405, and the finished units shall meet the requirements of this section.~~

~~**R4407.2.7.1.2** Concrete blocks used for fire-resistive walls rated 2 hours or more, or used for load-bearing or exterior walls, shall have a minimum face shell thickness of 11/4 inches (32 mm), a minimum web thickness of 1 inch (25 mm), and shall have a net cross-sectional area not less than 50 percent of the gross section.~~

~~**R4407.2.7.1.3** Concrete blocks for other purposes shall have wall and web thickness of not less than 3/4 inch (19 mm).~~

~~**R4407.2.7.1.4** Where masonry walls are required by this code to be 8 inch (203 mm) thickness, hollow concrete blocks units may be 75/8 by 75/8 by 155/8 inches (195 by 195 by 398 mm) modular dimension with corresponding widths for tie columns and tie beams.~~

~~**R4407.2.7.2 Quality.** Standard units of hollow concrete block shall conform to the Standard Specification for Hollow Load-Bearing Concrete Masonry Units, ASTM C 90, except that the maximum moisture content shall not exceed 50 percent of the total absorption.~~

~~**R4407.2.8 Structural clay tile.**~~

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~~**R4407.2.8.1 Limitations.** All hollow burned clay wall tile used for fire-resistive walls rated 2 hours or more, load-bearing or exterior walls shall be load-bearing tile.~~

~~**R4407.2.8.2 Tests.** Tests shall be conducted in accordance with the Standard Methods of Sampling and Testing Structural Clay Tile, ASTM C 212.~~

~~**R4407.2.8.3 Quality.**~~

~~**R4407.2.8.3.1** Structural clay load-bearing wall tile shall conform to the Standard Specification of Structural Clay Load-Bearing Wall Tile, ASTM C 34.~~

~~**R4407.2.8.3.2** Structural clay floor tile shall conform to the Standard Specification for Structural Clay Floor Tile, ASTM C 57.~~

~~**R4407.2.8.3.3** Structural clay nonload-bearing tile shall conform to the Standard Specification for Structural Clay Nonload-Bearing Tile, ASTM C 56.~~

~~**R4407.2.9 Gypsum tile.**~~

~~**R4407.2.9.1 Limitations**. Precast gypsum shall not be used in load-bearing masonry or in any masonry that will be exposed to the weather.~~

~~**R4407.2.9.2 Tests.** Tests shall be made in accordance with the Chemical Analysis of Testing Gypsum and Gypsum Products, ASTM C 471, Physical Testing of Gypsum Plasters and Gypsum Cement, ASTM C 472, and Physical Testing of Gypsum Board Products and Gypsum Partition Tile and Block, ASTM C 473.~~

~~**R4407.2.9.3 Quality**. Gypsum partition tile or block shall conform to the Standard Specification for Gypsum Tile or Block, ASTM C 52, Chemical Analysis of Testing Gypsum and Gypsum Products, ASTM C 471, Physical Testing of Gypsum Plasters and Gypsum Cement, ASTM C 472, and Physical Testing of Gypsum Board Products and Partition Tile and Block, ASTM C 473.~~

~~**R4407.2.10 Plain concrete**. Plain concrete is concrete cast in place and not reinforced, or reinforced only for shrinkage or change of temperature. Plain concrete shall be mixed, placed and cured as specified for concrete in~~

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S5014 Text Modification

Page: 5

~~Section R4405. The minimum strength of regular concrete shall be not less than 2,000 psi (13.8 MPa) in 28 days. The minimum strength of lightweight aggregate concrete shall be not less than 500 psi (3.5 MPa) in 28 days.~~

~~**R4407.2.11** Plain gypsum concrete. Plain gypsum concrete is gypsum concrete cast in place and either unreinforced or reinforced for shrinkage.~~

~~**R4407.2.12 Mortar.**~~

~~**R4407.2.12.1 General.** Except as otherwise set forth herein, all mortars and the materials therein shall conform to the Standard Specifications for Mortar of Masonry Units, ASTM C 270.~~

~~**R4407.2.12.1.1** The gradation of aggregates for masonry mortar shall be such that the fineness modulus is between 1.20 and 2.35 when determined in accordance with the Standard Specifications for Aggregate for Masonry Mortar, ASTM C 144.~~

~~**R4407.2.12.1.2** Aggregates shall be quarried or washed in fresh water and shall contain not more than 1/20 of 1 percent salt by weight.~~

~~**MORTAR STRENGTH PROPERTY SPECIFICATIONS**~~

~~Type~~	~~Minimum Average Strength~~	
	~~(psi)~~	~~(MPa)~~
~~M~~	~~2500~~	~~(17.2)~~
~~S~~	~~1800~~	~~(12.4)~~
~~N~~	~~750~~	~~(5.2)~~
~~O~~	~~350~~	~~(2.4)~~

~~**R4407.2.12.1.3** Mortar used to bond unit masonry shall be of Type M, S, N or O and shall comply with either the property specifications set forth hereinafter or the proportion specifications of the standard set forth in R4407.2.12.1.~~

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R4407.2.12.1.4 The type of mortar based on consideration of the location of the unit masonry shall be as follows:

USE OF LOCATION TYPE OF MORTAR

Below grade foundations and walls M

Swimming pool walls and retaining walls M

Fire resistive walls rated 2 hours or more M or S

Exterior walls and load bearing walls M or S

Piers less than 32 inches wide M or S

Partitions M, S or N

Solid masonry units One classification less than that above

Mortar or grout under concentrated loads M

Fences M, S, N or O

Gypsum Gypsum

For SI: 1 inch = 25.4 mm.

R4407.2.12.1.5 All solid unit masonry shall be laid in full beds with full end joints. All hollow unit masonry shall be laid with full mortar coverage of the face shells in both horizontal and vertical joints.

SECTION R4407.3

HIGH-VELOCITY HURRICANE ZONES

ALLOWABLE UNIT STRESSES IN UNIT MASONRY

R4407.3.1 Compression.

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R4407.3.1.1 Allowable working compressive stresses in masonry walls shall not exceed the limits in pounds per square inch (MPa) of gross area in the following table:

UNIT	TYPE N OR O MORTAR	TYPE M OR S MORTAR
Brick	200 (1.4)	300 (2.1)
Stone	450 (3.1)	600 (4.1)
Rubble Stone	200 (1.4)	300 (2.1)
Concrete Blocks	100 (0.7)	150 (1.0)
Clay Tile	80 (0.55)	100 (0.7)

R4407.3.1.2 The maximum allowable working stress in plain concrete shall be the following percentage of the ultimate strength of the concrete in compression:

Compression	0.20 f ' c
Shear and diagonal tension	0.02 f ' c

Where f ' c represents the ultimate compressive strength.

R4407.3.2 The shear in unit masonry shall not exceed 1/10 the allowable compressive stress.

R4407.3.3 Un-reinforced unit masonry shall be assumed to have no value in resisting axial tension (uplift). Flexural tension is allowed in unreinforced masonry per ACI 530.

R4407.3.4 Concentrations. Walls of hollow masonry units shall not directly support concentrated loads.

SECTION R4407.4

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S5014 Text Modification

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~~**HIGH-VELOCITY HURRICANE ZONES**~~

~~**CONSTRUCTION DETAILS**~~

~~**R4407.4.1 General.**~~

~~**R4407.4.1.1** Masonry walls of hollow or solid units or plain concrete shall be constructed as specified in this section.~~

~~**R4407.4.1.2** Designed reinforced concrete walls, columns and beams shall be as specified in Section R4405, except that such designed columns and beams shall be not less than the equivalent of the minimums herein set forth.~~

~~**R4407.4.1.3** Reinforced concrete required in this section shall comply with Section R4405, Reinforced concrete.~~

~~**R4407.4.1.4** Second hand masonry units shall not be used unless they conform to the requirements of this code, are sound and have been thoroughly cleaned and are approved for use by the building official.~~

~~**R4407.4.1.5** Bond shall be provided by lapping ends in successive vertical courses.~~

~~**R4407.4.1.6** Minimum No. 9 gauge horizontal joint reinforcing at every alternate course (16 inches spacing), ladder type for reinforced masonry and truss type for all others shall be provided. This reinforcement shall extend 4 inches (102 mm) into tie columns or be tied to structural columns with approved methods where structural columns replace the tie columns.~~

~~**R4407.4.2 Exterior walls.**~~

~~**R4407.4.2.1 General.**~~

~~**R4407.4.2.1.1** Exterior walls of unit masonry shall have a minimum thickness of 8 inches (203 mm) except as otherwise set forth in Sections R4407.2.7.1.4 and R4407.4.2.11~~

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~~**R4407.4.2.1.2** No roof or other members shall be placed to develop direct horizontal thrust on walls unless such walls are specifically designed.~~

~~**R4407.4.2.1.3** The maximum area of wall panels of 8 inch (203 mm) thick unit masonry, as measured between the concrete members which frame the panel such as the beams and tie columns, shall not exceed 240 square feet (22.3 m2), except as set forth in Section R4407.4.2.2.~~

~~**R4407.4.2.2 Tie columns.**~~

~~**R4407.4.2.2.1** Concrete tie columns shall be required in exterior walls of unit masonry. Concrete tie columns shall be required at all corners, at intervals not to exceed 16 feet (4.9 m) center to center of columns, adjacent to any corner opening exceeding 4 feet (1219 mm) in width, and at the ends of free standing walls exceed 2 feet (610 mm) in length. When openings exceed 8 feet (2.4 m) in width, tie columns shall be provided on each side of all such openings. All gable and shed end corners shall have tie columns.~~

~~**R4407.4.2.2.2** When openings are between 3 feet and 8 feet (914 mm and 2438 mm) in width, such openings shall have one #5 vertical reinforcing bar at each side. The vertical bars shall be placed in concrete filled cells and shall extend into footings and into tie beams. All such bars shall be continuous from footing to tie beam. All splices, where needed, shall be 30 inches (762 mm) minimum.~~

~~**R4407.4.2.2.3** Tie columns shall be not less than 12 inches (305 mm) in width. Tie columns having an unbraced height not exceeding 15 feet (4.6 m) shall be not less in thickness than the wall or less than a nominal 8 inches (203 mm), and, where exceeding 15 feet (4.6 m) in unbraced height, shall be not less in thickness than 12 inches (305 mm). The unbraced height shall be taken at the point of positive lateral support in the direction of consideration or the column may be designed to resist applicable lateral loads based on rational analysis.~~

~~**R4407.4.2.2.4** Tie columns shall be reinforced with not less than four #5 vertical bars for 8 by 12 inch (203 by 305 mm) columns nor less than four #6 vertical bars for 12 by 12 inch (305 by 305 mm) columns nor less reinforcing steel than 0.01 of the cross sectional area for columns of other dimension nor less than may be required to resist axial loads or bending forces. Vertical reinforcing shall be doweled to the footing and splices shall be lapped 30 bar diameters. Columns shall be tied with #2 hoops spaced not more than 12 inches (305 mm) apart.~~

~~**R4407.4.2.2.5** The concrete tie columns set forth herein are a minimum to limit masonry panel areas and provide an integrated framework for masonry. The spacing of concrete columns for skeleton frame construction, designed as specified in Section R4405, may exceed the spacing herein set forth provided the masonry panels have an area less than 240 square feet (22.3 m2) and the structural system is designed to transmit horizontal wind loads to the columns.~~

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R4407.4.2.2.6 Concrete tie columns designed to limit masonry panel areas may be offset at tie beams or other horizontal members to avoid openings, but the maximum spacing shall not be exceeded.

R4407.4.2.2.7 Concrete columns in load bearing walls shall be poured only after masonry units are in place. Where masonry walls of skeleton frame construction are laid up after the frame has been erected, adequate anchorage designed by a professional engineer shall be provided. Where structural steel members are made fire resistive with masonry units, the panel walls shall be bonded to the fire resistive materials.

R4407.4.2.2.8 Where the minimum spacing of tie columns, as set forth in Section R4407.4.2.2.1, has been satisfied and where structural columns of skeleton frame construction are spaced as specified in Section R4407.4.2.2.5, provision for resisting the horizontal and vertical loads at the edges of masonry panels abutting door and window openings in masonry walls where openings are not bounded by such reinforced concrete columns shall be considered and, where necessary, transfer the forces through the materials of assembly to the ground.

R4407.4.2.3 Tie beams.

R4407.4.2.3.1 A tie beam of reinforced concrete shall be placed in all walls of unit masonry, at each floor or roof level, and at such intermediate levels as may be required to limit the vertical heights of the masonry units to 16 feet (4.9 m). Well compacted and confined soil below grade may be considered lateral restraint but only above a point 1 foot (305 mm) below the grade where such restraint begins.

R4407.4.2.3.2 Unless otherwise required by design, all tie beams shall have four #3 ties at 12 inches (305 mm) o.c. at corners and at each bend and at 48 inches (1219 mm) o.c. elsewhere. A tie beam shall be not less in dimension or reinforcing than required for the conditions of loading nor less than the following minimums: A tie beam shall have a width of not less than a nominal 8 inches (203 mm), shall have a height of not less than 12 inches (305 mm) and shall be reinforced with not less than four #5 reinforcing bars placed two at the top and two at the bottom of the beam except that a tie beam using "U" type beam block may be used with the following limitations:

1. Limited to one story Group R3 occupancy.

2. Limited to unsupported spans of 7 feet (2.1 m).

3. Beam block shall be reinforced with one #7 bar in the top and one #7 bar in the bottom of the pour.

~~4. Beam block shall provide not less than 14 inches (356 mm) vertical dimension or less than 41/2 inches (114 mm) horizontal dimension of poured-in-place beam cross-section.~~

~~5. Where beam blocks are used, consideration of resistance to uplift caused by wind forces shall be based on only that portion of the dead load above the topmost mortar joint in the wall.~~

~~**R4407.4.2.3.3** The tie beam shall be continuous. Continuity of the reinforcing in straight runs shall be provided by lapping splices not less than 30 inches (762 mm). Continuity shall be provided at corners by bending two bars from each direction around the corner 30 inches (762 mm) or by adding two #5 bent bars which extend 30 inches (762 mm) each way from the corner. Continuity at columns shall be provided by continuing horizontal reinforcing through columns or by bending horizontal reinforcing in the columns a distance of 18 inches (457 mm).~~

~~**R4407.4.2.3.4** A tie beam shall not be required where floor or roof systems provide a rigid diaphragm of reinforced concrete with a minimum thickness of 4 inches (102 mm) or where a floor or roof system has an equivalent stiffness factor of not less than 0.5 cubic inches, as determined by the moment of inertia divided by the length. (Per foot of width, measured normal to the plane of the diaphragm and adequately anchored).~~

~~**R4407.4.2.3.5** Changes in level of the beams or structural concrete beams (beam) shall be made at tie columns or structural concrete columns and said tie columns or structural concrete columns shall be continuous from beam to beam.~~

~~**R4407.4.2.3.6** A tie beam may follow the rake of a gable or shed end if the slope does not exceed 3:12 and the requirements of Sections R4407.4.2.1.2 and R4407.4.2.1.3 are met.~~

~~**R4407.4.2.3.7** The concrete in tie beams shall be placed to bond to the masonry units immediately below and shall not be separated therefrom by wood, felt or any other material which may prevent bond. Felt paper no wider than the width of the cells of the block may be used provided that it is depressed a minimum of 2 inches (51 mm) in one cell of each block.~~

~~**R4407.4.2.3.8** Tie beams subject to uplift and lateral wind forces shall be sized and designed to resist all such forces. Tie beams over openings shall be sized and designed to resist dead and live loads combined with wind loads, whichever governs.~~

~~**R4407.4.2.4** Gable end and shed end walls. All masonry structures with gable end and shed end (half gable) walls shall have such end walls constructed of masonry, only in accordance with this section. A horizontal tie beam shall be provided in line with the lower ends of the gables and sheds, except as permitted in Section R4407.4.2.3.6 above, and designed in accordance with Sections R4407.4.2.1.2 and R4407.4.2.1.3, and load requirements as set forth in~~

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~~Section R4403. A concrete coping following the rake of the gable, not less than 64 square inches (413 cm2) in area reinforced with two #5 bars shall be provided. Tie columns at gable and shed ends shall be provided. Any intermediate tie columns required within the gable shall extend to the coping beam. Tie beams resting on masonry which are not subject to uplift and lateral wind forces shall be provided according to Section R4407.4.2.3.2.~~

~~R4407.4.2.5 Parapet walls.~~

~~R4407.4.2.5.1~~ ~~Masonry parapet walls shall be not less than 8 inches (203 mm) thick, shall be reinforced with minimum tie columns and shall be coped with a concrete beam not less than 64 square inches (413 cm2) in cross-section, reinforced with two #4 reinforcing bars.~~

~~R4407.4.2.5.2~~ ~~A parapet wall exceeding 5 feet (1524 mm) in height above a tie beam or other point of lateral support shall be specifically designed to resist horizontal wind loads.~~

~~R4407.4.2.6 Piers.~~

~~R4407.4.2.6.1~~ ~~In any section of a masonry wall of an enclosed structure where openings are arranged to leave sections of walls less than 16 inches (406 mm), such sections shall be steel or reinforced concrete.~~

~~R4407.4.2.6.2~~ ~~Isolated masonry piers of unenclosed structures shall be so constructed that the height of such piers shall not exceed 10 times the least dimension, that the cells are filled with cement grout and reinforced with not less than two #5 bars anchoring the beam to the foundation.~~

~~R4407.4.2.7 Cavity walls.~~

~~R4407.4.2.7.1~~ ~~Cavity walls consisting of two separate walls with an air space of not less than 2 nor more than 6 inches (51 to 152 mm) may be constructed of solid or hollow unit masonry provided such walls meet the specific requirements for tie columns and beams set forth in this section and are bonded together at intervals not more than 24 inches (610 mm) apart, vertically and horizontally, by masonry ties or by durable, rigid metal ties 0.10 square inch (64.5 mm2) in cross-section.~~

~~R4407.4.2.7.2~~ ~~The minimum thickness of the separate walls of cavity wall construction shall be 4 inches (102 mm), and units shall be laid in full beds of Portland cement mortar with full end joints.~~

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R4407.4.2.8 Brick and stone walls. Walls of brick and stone shall be laterally supported by tie columns and beams, or the equivalent thereof, as provided in this section and shall meet these additional requirements:

1. In all brick walls at least every sixth course on both sides of the wall shall be a header course or there shall be at least one full header in every 72 square inches (465 cm2) of each wall surface.

2. In walls more than 12 inches (305 mm) thick, the inner joints of header courses shall be covered with another header course that shall break joints with the course below.

3. Solid unit masonry shall comply with the standard Building Code Requirements for Masonry, ANSI A41.1.

4. Rubble stone walls shall be 4 inches (102 mm) thicker than is required for solid brick or concrete walls of the same respective heights, but in no part less than 16 inches (406 mm).

R4407.4.2.9 Substitutions.

R4407.4.2.9.1 Where, for architectural reasons or otherwise, it is desirable to reduce the area of any required tie column or tie beam below the specified requirements, the building official may grant such reduction, provided that the area of concrete omitted shall be replaced by reinforcing or structural steel in the ratio 1:(n–1) where "n" is defined as the Modular Ratio of Elasticity (Esteel/Econcrete).

R4407.4.2.9.2 Where it is desired to substitute for the #5 reinforcing as required by this section, three #4 bars may be substituted to replace two #5 bars.

R4407.4.2.10 Wall additions. Where new walls are connected to existing walls, such connection shall be by means of a starter column of minimum 8 by 8 inches (203 by 203 mm) dimension reinforced with two #5 bars.

R4407.4.2.11 Chases, recesses and openings.

R4407.4.2.11.1 Unit masonry walls required to be a minimum of 8 inches (203 mm) thick, such as exterior walls, fire walls and bearing walls, may be chased or recessed not deeper than one-half the wall thickness for an area not

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~~exceeding 8 square feet (0.74 m2), provided the horizontal dimension of the chase or recess does not exceed 4 feet (1219 mm) and provided the chasing shall not reduce the dimension of tie beams and tie columns to less than herein required, except as follows:~~

~~**Exception:** Four inch (102 mm) deep chases or recesses in 8 inch (703 mm) unit masonry walls may be constructed with 4 inch (102 mm) unit masonry panels provided such 4 inch (102 mm) unit masonry panel does not exceed 5 feet (1524 mm) in width, does not exceed 8 feet (2.4 m) in height, is bonded on one vertical side to 8 inch (203 mm) masonry or a tie column, and is not load bearing. Where such panel exceeds 2 feet (610 mm) in width at locations 20 feet (6.1 m) or more above grade in exterior walls, resistance to wind load shall be considered in the design, and a minimum of 4 inch by 8 inch (102 mm by 203 mm) tie column with two #5 vertical bars shall be provided in the free standing end of such 4 inch (102 mm) wall.~~

~~**R4407.4.2.11.2** Openings shall have lintels of reinforced concrete. Where such lintel is precast or formed separately from a tie beam, it shall bear not less than nominal 8 inches (203 mm) on the masonry, at each end except as may otherwise be approved for compliance with this code by Product Approval, or after rational analysis, but not less than 4 inches (102 mm). Where such lintel is formed integrally with the tie beam by deepening the tie beam above the opening, and the tie beam itself is capable of safely supporting all loads, the beam may span up to 6 feet (1.8 m) in length and may be deepened not to exceed 8 inches (203 mm) without additional reinforcing. Where the tie beam is deepened in excess of 8 inches (203 mm) with a span less than 6 feet (1.8 m) in length, and the tie beam itself is capable of supporting all loads, the dropped portion shall contain a #3 horizontal bar at the bottom, bent up at each end and fastened to the upper tie beam steel or two #4 horizontal bars. The dropped portion shall bear at least 4 inches (102 mm) on the masonry at each end. Where the span is in excess of 6 feet (1.8 m), the principal beam reinforcing shall be at the bottom of the beam.~~

~~**R4407.4.2.12 Glass block.**~~

~~**R4407.4.2.12.1** Masonry of glass unit masonry may be used in nonload-bearing exterior or interior walls and in openings which might otherwise be filled with windows, either isolated or in continuous bands, provided the glass unit masonry panels have a thickness of not less than 31/2 inches (89 mm) at the mortar joint and the mortared surfaces of the units are satisfactorily treated for mortar bonding.~~

~~**R4407.4.2.12.2** Glass unit masonry panels for exterior walls shall have a Product Approval.~~

~~**R4407.4.2.12.3** Exterior unit masonry panels shall be set in recesses at the jambs and, for panels exceeding 10 feet (3 m) in horizontal dimension between supports, at the head as well, to provide a bearing surface at least 1 inch (25 mm) wide along the panel edges; except that when approved by the building official for panels exceeding neither 100 square feet (9.3 m2) in area nor 10 feet (3 m) in either horizontal or vertical dimension, and situated four stories or less, and less than 52 feet (15.8 m) above grade level, anchorage may be provided by means of non-corrodible perforated metal strips.~~

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R4407.4.2.12.4 Glass unit masonry panels shall have reinforcement in the mortar joints spaced not more than 2 feet (610 mm) apart vertically and below and above any openings within a pane. The reinforcement shall consist of two parallel longitudinal galvanized steel wires, No. 9 gauge or larger, spaced 2 inches (51 mm) apart, and welded to No. 14 or heavier cross wires at intervals not exceeding 8 inches (203 mm), or the equivalent approved by the building official.

R4407.4.2.12.5 Glass unit masonry shall be laid in only Type M or S mortar or equivalent approved material. Both vertical and horizontal mortar joints shall be at least 1/4 inch (6 mm) and not more than 3/8 inch (9.5 mm) thick and shall be completely filled.

R4407.4.2.12.6 Every exterior glass unit masonry panel shall be provided with expansion joints at the sides and top. Expansion joints shall be entirely free of mortar, and shall be filled with resilient material.

R4407.4.2.12.7 Glass masonry units required to provide a fire resistance rating shall comply with Section R4407.4.1.12.8 or shall be fire tested and listed for their intended use.

R4407.4.2.12.8 View panels in 1 hour fire resistant walls shall be limited to glass unit masonry panels installed in steel channels, or panel anchor framing may be used where a 3/4 hour fire rating is required. Three and seven eighths inch (98 mm) thick glass masonry unit shall be limited to 120 square feet (1.1 m2) with no dimension greater than 12 feet (3.7 m) for masonry wall construction or to 94 square feet (8.7 m2) with no dimension greater than 10.75 feet (3.3 m) for non masonry wall construction. Three and one eighths inch (79 mm) thick glass masonry units shall be limited to 100 square feet (9.3 m2) with no dimension greater than 10 feet (3 m) for masonry wall construction or to 94 square feet (8.7 m2) with no dimension greater than 10.75 feet (3.3 m) for non masonry wall construction. Three inches (76 mm) thick glass masonry units shall be limited to 100 square feet (9.3 m2) with no dimension greater than 12 feet (3.7 m) for masonry wall construction or to 94 square feet (8.7 m2) with no dimension greater than 10 feet (3 m) for non masonry wall construction.

View panels in 2 hour fire resistant walls shall be limited to glass masonry units installed in steel channels and with a water curtain in conformance with NFPA 13 on each side at interior walls or at the interior of exterior walls. Three and seven eighths inch (98 mm) thick glass masonry units shall be limited to 100 square feet (9.3 m2) with no dimension greater than 10 feet (3 m).

The view panel assembly shall not exceed 25 percent of the wall separating a tenancy from a corridor or a corridor from an enclosed vertical opening or one fire rated area from another fire rated area.

Maximum 3/4 hour fire rated glass masonry units construction shall be used at non masonry wall construction. Panel anchors shall be provided at sill and jambs in non masonry wall construction using panel anchor framing. A fire retardant sealant shall be used at all channel and panel anchor framing. Expansion material at heads and jambs

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~~shall be either fibrous glass or mineral wool. All fire rated glass masonry units and panels shall conform to UL No. 9 and ASTM E 163.~~

~~**R4407.4.2.12.9** Interior glass masonry unit panels having thickness of 37/8 inches (98 mm) shall not exceed 250 square feet (23.2 m2) of unsupported wall surface and interior glass masonry unit panels having thickness of 31/8 inches (79 mm) shall not exceed 150 square feet (13.9 m2) of unsupported wall surface nor more than 25 feet (7.6 m) in length nor more than 20 feet (6.1 m) in height between supports.~~

~~**R4407.4.2.13 Grill block.**~~

~~**R4407.4.2.13.1** Decorative grills or screens constructed of unit masonry laid with cells open through the wall shall be as set forth herein or designs shall be based on rational analysis to resist applicable loads and computations shall be submitted to the building official for approval.~~

~~**R4407.4.2.13.2** Unit masonry grills or screens as described in this paragraph shall not be load bearing.~~

~~**R4407.4.2.13.3** Unit masonry in exterior wall shall be laid in Type M or S mortar.~~

~~**R4407.4.3 Interior bearing walls.** Interior bearing walls shall be constructed as specified in Section R4407.4.2 for exterior walls, except that interior bearing walls in one story building of Group H or I occupancy, where not required to be more than 1 hour fire resistive, may be constructed of 4 inch (162 mm) concrete block not exceeding 9 feet (2.7 m) in height, capped with a reinforced concrete beam not less than 4 inches (102 mm) in width nor less than 12 inches (305 mm) in height, reinforced with two 1/2 inch rods (12.7 mm), and such walls shall support only a roof or ceiling not in excess of 700 pounds per lineal foot (10.2 kN/m) with no chases or recesses.~~

~~**R4407.4.5 Panel walls.**~~

~~**R4407.4.5.1** Panel walls of unit masonry shall be not less than 8 inches (203 mm) thick and shall be limited in panel dimension as set forth in Section R4407.4.2.~~

~~**R4407.4.5.2** Panel walls of reinforced concrete shall be not less than 4 inches (102 mm) thick nor less than required by design as specified in Section R4405.~~

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R4407.4.6 Veneered walls.

R4407.4.6.1 Masonry backing.

R4407.4.6.1.1 Veneering or facing on masonry backing shall not be considered as adding any strength to such walls and shall be limited in height above foundations or between proper and adequate supports to 30 feet (9.1 m). Veneering shall be securely anchored to masonry backing by means of substantial, non-corroding metal wall ties, spaced not farther apart than 16 inches (406 mm) vertically or 24 inches (610 mm) horizontally.

R4407.4.6.1.2 Tile veneering, not more than 1 inch (25 mm) thick with individual units not exceeding 20 inches (508 mm) in any dimension and having not more than 200 square inches (1290 cm2) of surface area with corrugations or scoring on the back side thereof, need not be anchored in accordance with the above requirements but shall be cemented solid to the backing with Portland cement mortar so as to provide a continuous integral support to the backing.

R4407.4.6.2 Wood backing.

R4407.4.6.2.1 In all cases, before applying masonry veneer, a substantial waterproofed paper or asphalt-saturated felt, weighing not less than 14 pounds per 100 square feet (0.68 kg/m2) shall be applied horizontally, shingle fashion, over diagonal sheathing. Horizontal joints in the paper or felt shall be lapped not less than 4 inches (102 mm) and vertical end joints not less than 6 inches (152 mm).

R4407.4.6.2.2 Masonry veneer shall be not less than 33/4 inches (95 mm) thick and shall be bonded to the backing by means of substantial non-corroding metal wall ties spaced not farther apart than 16 inches (406 mm) vertically and 24 inches (610 mm) horizontally.

R4407.4.8 Fences.

R4407.4.8.1 Masonry fences so located on a property that such fence, at the proposed height or by a future addition to height, could be used as a wall of a building shall be constructed with foundations and tie columns as provided for an exterior wall. Such fence shall be capped with a coping beam not less than 64 square inches (413 cm2) in cross-section reinforced with a minimum of two #4 rods, when not exceeding a height of 5 feet (1.5 m), or shall be capped by a tie beam as provided for exterior walls if exceeding a height of 5 feet (1.5 m).

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~~**R4407.4.8.2** Masonry fences, so located on a property that by zoning regulation such fence could not be used as a wall of a building, shall be constructed as follows:~~

~~**R4407.4.8.2.1** Fences not exceeding 5 feet (1.5 m) in height shall be 8 inches (203 mm) thick and shall not be required to have tie columns, but shall be required to have a coping as provided herein; or such fences may be 4 inches (102 mm) thick with tie columns and coping not less than 8 inches (203 mm) thick.~~

~~**R4407.4.8.2.2** Fences exceeding 5 feet (1.5 m) in height shall be not less than 8 inches (203 mm) thick and shall have tie columns and tie beams as required for exterior walls.~~

~~**R4407.4.9 Other masonry walls.** Walls of masonry materials or arrangements of masonry units other than those specifically set forth in this section shall be in conformance with the general provisions of this code, may be classified by the subject to all or any of the requirements therefor to and any such additional requirements as the building official may prescribe.~~

~~**SECTION R4407.5**~~

~~**HIGH VELOCITY HURRICANE ZONES — REINFORCED UNIT MASONRY**~~

~~**R4407.5.1 Standards.** The provisions of TMS 402/ACI 530/ASCE 5, and TMS 602/ACI 530.1/ASCE6 are hereby adopted as a minimum for the design and construction of reinforced unit masonry. In addition to TMS 402/ ACI 530/ ASCE 5 and TMS 602/ACI 530.1/ASCE6 reinforced unit masonry structures shall comply with Sections R4407.2~~

~~**Exception:** Unless otherwise specified by the designing architect or engineer, where plan review and inspections are performed by a local building department in accordance with Sections 106 and 109, the provisions of TMS 402/ ACI 530/ASCE 5/TMS 402, Chapter 1, Section 1.18 and TMS 602/ ACI 530.1/ASCE 6/ Sections 1.5 and 1.6 shall not apply.~~

~~**R4407.5.2 General.** Reserved.~~

~~**R4407.5.3** The design of buildings and structures of reinforced unit masonry shall be by a professional engineer or registered architect.~~

~~**R4407.5.4 Special inspector.** A Florida registered architect or professional engineer shall furnish inspection of all reinforced unit masonry structures.~~

~~**R4407.5.5 Concrete masonry strength.** Concrete masonry strength shall be determined by unit strength method from TMS 602/ACI 530.1/ ASCE 6 Section 1.4 or in accordance with ASTM C 1314.~~

~~**R4407.5.6. Reinforcement.** Reinforcement shall comply with TMS 402/ACI 530/ ASCE 5 and TMS 602/ ACI 530.1/ ASCE 6 except as modified herein.~~

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R4407.5.6.1 Development of bars in tension and compression shall be in accordance with TMS 402/ASCE 530/ ASCE5 Section 2.1.9.3 with the following changes to the factor y of Equation 2-12.

y = 1.0 for No. 3 (M#10) through No. 5 (M#16) bars;

y = 1.04 for No. 6 (M#19) through No. 7 (M#22) bars; and

y = 1.2 for No. 8 (M#25) through No. 11 (M#36) bars

Where epoxy coated bars are used, lap length shall be increased by 50 percent.

R4407.5.6.2 Splices of reinforcement shall be in accordance with TMS 402/ ACI 530/ ASCE 5. Lap splices, welded splices, or mechanical splices are permitted in accordance with the provisions of TMS 402/ ACI 530/ ASCE 5 Section 2.1.9.7. Welding shall conform to AWS D1.4.

R4407.5.6.3 Lap splices shall be in accordance with TMS 402/ ACI 530/ ASCE 5, Section 2.1.9.7.1.1 with the modifications of Section 2122.4.1 to the factor y of Equation 2-12. In no case shall the length of the lapped splice be less than 48 bar diameters, but not less than 12 inches.

R4407.5.6.4 Joint reinforcement. Horizontal joint reinforcement shall be provided at every other course. Joint reinforcement shall be a minimum of No. 9 gauge and shall comply with TMS 602/ACI 530.1/ ASCE 6 Sections 2.4C through 2.4F. Joint reinforcement shall be placed in accordance with TMS 602/ACI 530.1/ ASCE 6 Section 3.4 B.7.

R4407.5.7 Concentrated loads shall be in accordance with TMS 402/ ACI 530/ ASCE 5 Sections 1.9.7.2 and 2.1.8 and shall not be assumed distributed across continuous vertical joints, including stack bond joints, unless reinforcing elements are designed and provided to distribute such loads.

R4407.5.8 Reinforced masonry bearing walls shall have a nominal thickness of not less than 8 inches (203 mm).

R4407.5.9 Anchorage requirements. Anchorage shall be in accordance with TMS 402/ ACI 530/ ASCE 5. Loading shall comply with TMS 402/ ACI 530/ ASCE 5 Section 1.7 and the following.

R4407.5.9.1 Reinforced masonry walls shall be securely anchored to adjacent structural members such as roofs, floors, columns, pilasters, buttresses and intersection walls.

R4407.5.9.2 Masonry walls shall be anchored to all floors and roofs that provide lateral support to such walls.

R4407.5.9.3 Such anchorage shall provide a positive direct connection capable of resisting the horizontal forces as required in Chapter 16 (High Velocity Hurricane Zones), or a minimum force of 200 pounds per lineal foot (2919 N/m) of wall, whichever is greater.

R4407.5.9.4 Required anchors shall be embedded in reinforced grouted cells. Anchor bolts shall be installed in accordance with TMS 602/ ACI 530.1/ ASCE 6 Section 3.4 D

R4407.5.9.5 Wood framing connected by nails shall not be considered as acceptable anchorage.

R4407.5.10 Mortar and grout.

R4407.5.10.1 Mortar materials shall comply with TMS 602/ ACI 530.1/ ASCE 6 Section 2.1. Grout materials shall comply with TMS 602/ ACI 530.1/ ASCE 6 Section 2.2.

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~~**R4407.5.10.2** Vertical cells to be grouted shall provided vertical alignment sufficient to maintain clear, unobstructed, continuous, vertical cores measuring not less than 2 ½ inches by 3 inches (51 mm by 76 mm) for fine aggregate grout and 3 inches by 3 inches for coarse aggregate grout as defined by ASTM C 476. The architect or engineer may specify other grout space sizes shall be permitted provided they comply with TMS 402/ ACI 530/ ASCE 5 Section 1.19 and TMS 602/ ACI 530.1/ ASCE 6 Section 3.5C.~~

~~**R4407.5.10.3** Placing of mortar and masonry units shall comply with TMS 602/ ACI 530.1/ ASCE 6 Section 3.3.~~

~~**R4407.5.10.4 Grout placement.** Grout placement shall be in accordance with TMS 402/ ACI 530/ ASCE 5 and TMS 602/ ACI 530.1/ ASCE 6.~~

~~**R4407.5.10.5 Confinement.** Confine grout to the areas indicated on the Project Drawings. Use material to confine grout that permits bond between masonry units and mortar.~~

~~**R4407.5.10.6** Unless otherwise required, mix grout other than self-consolidating grout to a consistency that has a slump between 8 and 11 in. (203 and 279 mm). Self-consolidating grout shall comply with TMS 602/ ACI 530.1/ ASCE 6~~

~~**R4407.5.10.7** Grout shall be placed before any initial set has occurred, but in no case more than 1 1/2 hours after the mix-designed water has been added.~~

~~**R4407.5.10.8** Grouting shall be a continuous operation in lifts not exceeding 5 feet (1.5 m) and a maximum pour of 12 feet 8 inches (3.8 m). Grout placement shall comply with TMS 602/ ACI 530.1/ ASCE 6.~~

~~**R4407.5.10.9** Grouting shall be consolidated between lifts by puddling, rodding or mechanical vibration.~~

~~**R4407.5.10.10**. Grout keys shall be formed between grout pours. Grout keys shall be formed between grout lifts when the first lift is permitted to set prior to placement of the subsequent lift.~~

~~1. Form a grout key by terminating the grout a minimum of 1½ in. (38.1 mm) below a mortar joint.~~

~~2. Do not form grout keys within beams.~~

~~3. At beams or lintels laid with closed bottom units, terminate the grout pour at the bottom of the beam or lintel without forming a grout key.~~

~~**R4407.5.11 Bearing.** Precast floor and roof units supported on masonry walls shall provide minimum bearing of 3 inches (76 mm) and anchorage in accordance with Section R4407.5.9.4.~~

~~**R4407.5.12** Intersecting walls shall comply with TMS 402/ ACI 530/ ASCE 5 Section 1.9.4.~~

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SECTION 4407
HIGH-VELOCITY HURRICANE ZONES — MASONRY

R4407.1 ~~Masonry shall be designed by a method admitting of rational analysis based on established principles of mechanics~~ Refer to Chapter 21 of the Florida Building Code, Building.

~~**SECTION R4407.2**~~
~~**HIGH-VELOCITY HURRICANE ZONES — QUALITY, TESTS, AND APPROVALS**~~

~~**R4407.2.1 Quality.** The quality of materials assembled into masonry and the method and manner of their assembly shall conform to the requirements of this section.~~

~~**R4407.2.1.1 Workmanship.** Masonry construction shall be in conformance with the tolerances, quality and methods of construction as set forth in standards referenced in this section; the Portland Cement Association Concrete Masonry Handbook , ANSI A41.1, A41.2 and AWS Structural Welding Code: Reinforcing Steel (D1.4).~~

~~**R4407.2.1.2 Other materials.** A material of masonry, other than set forth herein, which is incombustible and otherwise sufficiently embodies the characteristics and satisfies the requirements of one of the materials herein may be approved by the building official, subject to such tests as may be prescribed.~~

~~**R4407.2.2 Tests.**~~

~~**R4407.2.2.1** The building official may require materials to be subjected to tests to determine their quality whenever there is reason to believe that a material is no longer up to the standards on which the approval was based. The cost of such tests shall be borne by the person or persons proposing to use or continue to use such material or product.~~

~~**R4407.2.2.2** Materials shall be tested in accordance with the standard specifications of the ASTM International (ASTM) as such standard specifications are noted in this section.~~

~~**R4407.2.3 Approvals.**~~

~~**R4407.2.3.1** Only such masonry units as bear the approval of the building official and are manufactured or fabricated by plants having a certificate of competency issued by the authority having jurisdiction, shall be considered acceptable for the construction of buildings or other structures.~~

~~**R4407.2.3.2** Approval of masonry units and manufacturing or fabricating plants shall be for periods not to exceed one year and may be obtained upon application and the submission of certificates of tests in accordance with the provisions of this section.~~

~~**R4407.2.3.3** The provisions for tests for approval of masonry units shall not be construed as in lieu of any tests otherwise required under this section.~~

~~**R4407.2.3.4** Failure of a manufacturer of masonry units to obtain approval or to submit tests as required in this section, or such additional tests as the building official may require, shall be cause for rejection of such masonry units.~~

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R4407.2.4 Brick.

R4407.2.4.1 General. Brick shall include masonry units usually 21/4 inches (57 mm) thick, 33/4 inches (95 mm) wide, and 8 inches (203 mm) long, and not less than 75 percent solid.

R4407.2.4.2 Tests. Tests shall be conducted in accordance with Standard Methods of Testing Brick, ASTM C 67.

R4407.2.4.3 Quality.

R4407.2.4.3.1 Burned clay or shale brick shall conform to either the standard Specification for Building Brick (Solid Masonry Units made from Clay or Shale), ASTM C 62, the Standard Specification for Facing Brick (Solid Masonry Units made from Clay or Shale), ASTM C 216 or the Standard Specification for Hollow Brick (Hollow Masonry Units made from Clay or Shale), ASTM C 652.

R4407.2.4.3.2 Sand-lime brick shall conform to the Standard Specification for Concrete Building Brick, ASTM C 55.

R4407.2.4.3.3 Concrete brick shall conform to the Standard Specification for Concrete Building Brick, ASTM C 55.

R4407.2.5 Stone. Stone for masonry shall be hard and durable.

R4407.2.6 Cast stone. Cast stone shall be made of Portland cement, aggregates and water with or without admixtures. Cast stone for load-bearing masonry or where exposed to the weather shall have an average compressive strength, at 28 days, of at least 3,000 psi (20.7 MPa) and shall have not more than 7 percent water absorption by weight.

R4407.2.7 Concrete blocks.

R4407.2.7.1 General.

R4407.2.7.1.1 Concrete blocks shall be made of Portland cement, water and approved aggregates. The materials shall conform to the requirements for the materials of concrete specified in Section R4405, and the finished units shall meet the requirements of this section.

R4407.2.7.1.2 Concrete blocks used for fire-resistive walls rated 2 hours or more, or used for load-bearing or exterior walls, shall have a minimum face shell thickness of 11/4 inches (32 mm), a minimum web thickness of 1 inch (25 mm), and shall have a net cross-sectional area not less than 50 percent of the gross section.

R4407.2.7.1.3 Concrete blocks for other purposes shall have wall and web thickness of not less than 3/4 inch (19 mm).

R4407.2.7.1.4 Where masonry walls are required by this code to be 8 inch (203 mm) thickness, hollow concrete blocks units may be 75/8 by 75/8 by 155/8 inches (195 by 195 by 398 mm) modular dimension with corresponding widths for tie columns and tie beams.

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~~**R4407.2.7.2 Quality.** Standard units of hollow concrete block shall conform to the Standard Specification for Hollow Load-Bearing Concrete Masonry Units, ASTM C 90, except that the maximum moisture content shall not exceed 50 percent of the total absorption.~~

~~**R4407.2.8 Structural clay tile.**~~

~~**R4407.2.8.1 Limitations.** All hollow burned clay wall tile used for fire-resistive walls rated 2 hours or more, load-bearing or exterior walls shall be load-bearing tile.~~

~~**R4407.2.8.2 Tests.** Tests shall be conducted in accordance with the Standard Methods of Sampling and Testing Structural Clay Tile, ASTM C 212.~~

~~**R4407.2.8.3 Quality.**~~

~~**R4407.2.8.3.1** Structural clay load-bearing wall tile shall conform to the Standard Specification of Structural Clay Load-Bearing Wall Tile, ASTM C 34.~~

~~**R4407.2.8.3.2** Structural clay floor tile shall conform to the Standard Specification for Structural Clay Floor Tile, ASTM C 57.~~

~~**R4407.2.8.3.3** Structural clay nonload-bearing tile shall conform to the Standard Specification for Structural Clay Nonload-Bearing Tile, ASTM C 56.~~

~~**R4407.2.9 Gypsum tile.**~~

~~**R4407.2.9.1 Limitations**. Precast gypsum shall not be used in load-bearing masonry or in any masonry that will be exposed to the weather.~~

~~**R4407.2.9.2 Tests.** Tests shall be made in accordance with the Chemical Analysis of Testing Gypsum and Gypsum Products, ASTM C 471, Physical Testing of Gypsum Plasters and Gypsum Cement, ASTM C 472, and Physical Testing of Gypsum Board Products and Gypsum Partition Tile and Block, ASTM C 473.~~

~~**R4407.2.9.3 Quality**. Gypsum partition tile or block shall conform to the Standard Specification for Gypsum Tile or Block, ASTM C 52, Chemical Analysis of Testing Gypsum and Gypsum Products, ASTM C 471, Physical Testing of Gypsum Plasters and Gypsum Cement, ASTM C 472, and Physical Testing of Gypsum Board Products and Partition Tile and Block, ASTM C 473.~~

~~**R4407.2.10 Plain concrete**. Plain concrete is concrete cast in place and not reinforced, or reinforced only for shrinkage or change of temperature. Plain concrete shall be mixed, placed and cured as specified for concrete in Section R1405. The minimum strength of regular concrete shall be not less than 2,000 psi (13.8 MPa) in 28 days. The minimum strength of lightweight aggregate concrete shall be not less than 500 psi (3.5 MPa) in 28 days.~~

~~**R4407.2.11** Plain gypsum concrete. Plain gypsum concrete is gypsum concrete cast in place and either unreinforced or reinforced for shrinkage.~~

~~**R4407.2.12 Mortar.**~~

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R4407.2.12.1 General. Except as otherwise set forth herein, all mortars and the materials therein shall conform to the Standard Specifications for Mortar of Masonry Units, ASTM C 270.

R4407.2.12.1.1 The gradation of aggregates for masonry mortar shall be such that the fineness modulus is between 1.20 and 2.35 when determined in accordance with the Standard Specifications for Aggregate for Masonry Mortar, ASTM C 144.

R4407.2.12.1.2 Aggregates shall be quarried or washed in fresh water and shall contain not more than 1/20 of 1 percent salt by weight.

MORTAR STRENGTH PROPERTY SPECIFICATIONS

Type	Minimum Average Strength (psi)	(MPa)
M	2500	(17.2)
S	1800	(12.4)
N	750	(5.2)
O	350	(2.4)

R4407.2.12.1.3 Mortar used to bond unit masonry shall be of Type M, S, N or O and shall comply with either the property specifications set forth hereinafter or the proportion specifications of the standard set forth in R4407.2.12.1.

R4407.2.12.1.4 The type of mortar based on consideration of the location of the unit masonry shall be as follows:

USE OF LOCATION	TYPE OF MORTAR
Below grade foundations and walls	M
Swimming pool walls and retaining walls	M
Fire resistive walls rated 2 hours or more	M or S
Exterior walls and load bearing walls	M or S
Piers less than 32 inches wide	M or S
Partitions	M, S or N
Solid masonry units	One classification less than that above
Mortar or grout under concentrated loads	M
Fences	M, S, N or O
Gypsum	Gypsum

For SI: 1 inch = 25.4 mm.

R4407.2.12.1.5 All solid unit masonry shall be laid in full beds with full end joints. All hollow unit masonry shall be laid with full mortar coverage of the face shells in both horizontal and vertical joints.

SECTION R4407.3
HIGH-VELOCITY HURRICANE ZONES
ALLOWABLE UNIT STRESSES IN UNIT MASONRY

R4407.3.1 Compression.

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R4407.3.1.1 Allowable working compressive stresses in masonry walls shall not exceed the limits in pounds per square inch (MPa) of gross area in the following table:

UNIT	TYPE N OR O MORTAR	TYPE M OR S MORTAR
Brick	200 (1.4)	300 (2.1)
Stone	450 (3.1)	600 (4.1)
Rubble Stone	200 (1.4)	300 (2.1)
Concrete Blocks	100 (0.7)	150 (1.0)
Clay Tile	80 (0.55)	100 (0.7)

R4407.3.1.2 The maximum allowable working stress in plain concrete shall be the following percentage of the ultimate strength of the concrete in compression:

Compression 0.20 f ' c

Shear and diagonal tension 0.02 f ' c

Where f ' c represents the ultimate compressive strength.

R4407.3.2 The shear in unit masonry shall not exceed 1/10 the allowable compressive stress.

R4407.3.3 Un-reinforced unit masonry shall be assumed to have no value in resisting axial tension (uplift). Flexural tension is allowed in unreinforced masonry per ACI 530.

R4407.3.4 Concentrations. Walls of hollow masonry units shall not directly support concentrated loads.

SECTION R4407.4
HIGH-VELOCITY HURRICANE ZONES CONSTRUCTION DETAILS

R4407.4.1 General.

R4407.4.1.1 Masonry walls of hollow or solid units or plain concrete shall be constructed as specified in this section.

R4407.4.1.2 Designed reinforced concrete walls, columns and beams shall be as specified in Section R4405, except that such designed columns and beams shall be not less than the equivalent of the minimums herein set forth.

R4407.4.1.3 Reinforced concrete required in this section shall comply with Section R4405, Reinforced concrete.

R4407.4.1.4 Second hand masonry units shall not be used unless they conform to the requirements of this code, are sound and have been thoroughly cleaned and are approved for use by the building official.

R4407.4.1.5 Bond shall be provided by lapping ends in successive vertical courses.

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R4407.4.1.6 Minimum No. 9 gauge horizontal joint reinforcing at every alternate course (16 inches spacing), ladder type for reinforced masonry and truss type for all others shall be provided. This reinforcement shall extend 4 inches (102 mm) into tie columns or be tied to structural columns with approved methods where structural columns replace the tie columns.

R4407.4.2 Exterior walls.

R4407.4.2.1 General.

R4407.4.2.1.1 Exterior walls of unit masonry shall have a minimum thickness of 8 inches (203 mm) except as otherwise set forth in Sections R4407.2.7.1.4 and R4407.4.2.11.

R4407.4.2.1.2 No roof or other members shall be placed to develop direct horizontal thrust on walls unless such walls are specifically designed.

R4407.4.2.1.3 The maximum area of wall panels of 8 inch (203 mm) thick unit masonry, as measured between the concrete members which frame the panel such as the beams and tie columns, shall not exceed 240 square feet (22.3 m2), except as set forth in Section R4407.4.2.2.

R4407.4.2.2 Tie columns.

R4407.4.2.2.1 Concrete tie columns shall be required in exterior walls of unit masonry. Concrete tie columns shall be required at all corners, at intervals not to exceed 16 feet (4.9 m) center-to-center of columns, adjacent to any corner opening exceeding 4 feet (1219 mm) in width, and at the ends of free-standing walls exceed 2 feet (610 mm) in length. When openings exceed 8 feet (2.4 m) in width, tie columns shall be provided on each side of all such openings. All gable and shed end corners shall have tie columns.

R4407.4.2.2.2 When openings are between 3 feet and 8 feet (914 mm and 2438 mm) in width, such openings shall have one #5 vertical reinforcing bar at each side. The vertical bars shall be placed in concrete filled cells and shall extend into footings and into tie beams. All such bars shall be continuous from footing to tie beam. All splices, where needed, shall be 30 inches (762 mm) minimum.

R4407.4.2.2.3 Tie columns shall be not less than 12 inches (305 mm) in width. Tie columns having an unbraced height not exceeding 15 feet (4.6 m) shall be not less in thickness than the wall or less than a nominal 8 inches (203 mm), and, where exceeding 15 feet (4.6 m) in unbraced height, shall be not less in thickness than 12 inches (305 mm). The unbraced height shall be taken at the point of positive lateral support in the direction of consideration or the column may be designed to resist applicable lateral loads based on rational analysis.

R4407.4.2.2.4 Tie columns shall be reinforced with not less than four #5 vertical bars for 8 by 12 inch (203 by 305 mm) columns nor less than four #6 vertical bars for 12 by 12 inch (305 by 305 mm) columns nor less reinforcing steel than 0.01 of the cross sectional area for columns of other dimension nor less than may be required to resist axial loads or bending forces. Vertical reinforcing shall be doweled to the footing and splices shall be lapped 30 bar diameters. Columns shall be tied with #2 hoops spaced not more than 12 inches (305 mm) apart.

R4407.4.2.2.5 The concrete tie columns set forth herein are a minimum to limit masonry panel areas and provide an integrated framework for masonry. The spacing of concrete columns for

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~~skeleton frame construction, designed as specified in Section R4405, may exceed the spacing herein set forth provided the masonry panels have an area less than 240 square feet (22.3 m2) and the structural system is designed to transmit horizontal wind loads to the columns.~~

~~R4407.4.2.2.6~~ ~~Concrete tie columns designed to limit masonry panel areas may be offset at tie beams or other horizontal members to avoid openings, but the maximum spacing shall not be exceeded.~~

~~R4407.4.2.2.7~~ ~~Concrete columns in load-bearing walls shall be poured only after masonry units are in place. Where masonry walls of skeleton frame construction are laid up after the frame has been erected, adequate anchorage designed by a professional engineer shall be provided. Where structural steel members are made fire-resistive with masonry units, the panel walls shall be bonded to the fire-resistive materials.~~

~~R4407.4.2.2.8~~ ~~Where the minimum spacing of tie columns, as set forth in Section R4407.4.2.2.1, has been satisfied and where structural columns of skeleton frame construction are spaced as specified in Section R4407.4.2.2.5, provision for resisting the horizontal and vertical loads at the edges of masonry panels abutting door and window openings in masonry walls where openings are not bounded by such reinforced concrete columns shall be considered and, where necessary, transfer the forces through the materials of assembly to the ground.~~

~~R4407.4.2.3 Tie beams.~~

~~R4407.4.2.3.1~~ ~~A tie beam of reinforced concrete shall be placed in all walls of unit masonry, at each floor or roof level, and at such intermediate levels as may be required to limit the vertical heights of the masonry units to 16 feet (4.9 m). Well compacted and confined soil below grade may be considered lateral restraint but only above a point 1 foot (305 mm) below the grade where such restraint begins.~~

~~R4407.4.2.3.2~~ ~~Unless otherwise required by design, all tie beams shall have four #3 ties at 12 inches (305 mm) o.c. at corners and at each bend and at 48 inches (1219 mm) o.c. elsewhere. A tie beam shall be not less in dimension or reinforcing than required for the conditions of loading nor less than the following minimums: A tie beam shall have a width of not less than a nominal 8 inches (203 mm), shall have a height of not less than 12 inches (305 mm) and shall be reinforced with not less than four #5 reinforcing bars placed two at the top and two at the bottom of the beam except that a tie beam using "U" type beam block may be used with the following limitations:~~

~~1. Limited to one-story Group R3 occupancy.~~

~~2. Limited to unsupported spans of 7 feet (2.1 m).~~

~~3. Beam block shall be reinforced with one #7 bar in the top and one #7 bar in the bottom of the pour.~~

~~4. Beam block shall provide not less than 14 inches (356 mm) vertical dimension or less than 41/2 inches (114 mm) horizontal dimension of poured-in-place beam cross section.~~

~~5. Where beam blocks are used, consideration of resistance to uplift caused by wind forces shall be based on only that portion of the dead load above the topmost mortar joint in the wall.~~

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R4407.4.2.3.3 The tie beam shall be continuous. Continuity of the reinforcing in straight runs shall be provided by lapping splices not less than 30 inches (762 mm). Continuity shall be provided at corners by bending two bars from each direction around the corner 30 inches (762 mm) or by adding two #5 bent bars which extend 30 inches (762 mm) each way from the corner. Continuity at columns shall be provided by continuing horizontal reinforcing through columns or by bending horizontal reinforcing in the columns a distance of 18 inches (457 mm).

R4407.4.2.3.4 A tie beam shall not be required where floor or roof systems provide a rigid diaphragm of reinforced concrete with a minimum thickness of 4 inches (102 mm) or where a floor or roof system has an equivalent stiffness factor of not less than 0.5 cubic inches, as determined by the moment of inertia divided by the length. (Per foot of width, measured normal to the plane of the diaphragm and adequately anchored).

R4407.4.2.3.5 Changes in level of the beams or structural concrete beams (beam) shall be made at tie columns or structural concrete columns and said tie columns or structural concrete columns shall be continuous from beam to beam.

R4407.4.2.3.6 A tie beam may follow the rake of a gable or shed end if the slope does not exceed 3:12 and the requirements of Sections R4407.4.2.1.2 and R4407.4.2.1.3 are met.

R4407.4.2.3.7 The concrete in tie beams shall be placed to bond to the masonry units immediately below and shall not be separated therefrom by wood, felt or any other material which may prevent bond. Felt paper no wider than the width of the cells of the block may be used provided that it is depressed a minimum of 2 inches (51 mm) in one cell of each block.

R4407.4.2.3.8 Tie beams subject to uplift and lateral wind forces shall be sized and designed to resist all such forces. Tie beams over openings shall be sized and designed to resist dead and live loads combined with wind loads, whichever governs.

R4407.4.2.4 Gable end and shed end walls. All masonry structures with gable end and shed end (half gable) walls shall have such end walls constructed of masonry, only in accordance with this section. A horizontal tie beam shall be provided in line with the lower ends of the gables and sheds, except as permitted in Section R4407.4.2.3.6 above, and designed in accordance with Sections R4407.4.2.1.2 and R4407.4.2.1.3, and load requirements as set forth in Section R4403. A concrete coping following the rake of the gable, not less than 64 square inches (413 cm2) in area reinforced with two #5 bars shall be provided. Tie columns at gable and shed ends shall be provided. Any intermediate tie columns required within the gable shall extend to the coping beam. Tie beams resting on masonry which are not subject to uplift and lateral wind forces shall be provided according to Section R4407.4.2.3.2.

R4407.4.2.5 Parapet walls.

R4407.4.2.5.1 Masonry parapet walls shall be not less than 8 inches (203 mm) thick, shall be reinforced with minimum tie columns and shall be coped with a concrete beam not less than 64 square inches (413 cm2) in cross section, reinforced with two #4 reinforcing bars.

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R4407.4.2.5.2 A parapet wall exceeding 5 feet (1524 mm) in height above a tie beam or other point of lateral support shall be specifically designed to resist horizontal wind loads.

R4407.4.2.6 Piers.

R4407.4.2.6.1 In any section of a masonry wall of an enclosed structure where openings are arranged to leave sections of walls less than 16 inches (406 mm), such sections shall be steel or reinforced concrete.

R4407.4.2.6.2 Isolated masonry piers of unenclosed structures shall be so constructed that the height of such piers shall not exceed 10 times the least dimension, that the cells are filled with cement grout and reinforced with not less than two #5 bars anchoring the beam to the foundation.

R4407.4.2.7 Cavity walls.

R4407.4.2.7.1 Cavity walls consisting of two separate walls with an air space of not less than 2 nor more than 6 inches (51 to 152 mm) may be constructed of solid or hollow-unit masonry provided such walls meet the specific requirements for tie columns and beams set forth in this section and are bonded together at intervals not more than 24 inches (610 mm) apart, vertically and horizontally, by masonry ties or by durable, rigid metal ties 0.10 square inch (64.5 mm2) in cross section.

R4407.4.2.7.2 The minimum thickness of the separate walls of cavity wall construction shall be 4 inches (102 mm), and units shall be laid in full beds of Portland cement mortar with full end joints.

R4407.4.2.8 Brick and stone walls. Walls of brick and stone shall be laterally supported by tie columns and beams, or the equivalent thereof, as provided in this section and shall meet these additional requirements:

1. In all brick walls at least every sixth course on both sides of the wall shall be a header course or there shall be at least one full header in every 72 square inches (465 cm2) of each wall surface.

2. In walls more than 12 inches (305 mm) thick, the inner joints of header courses shall be covered with another header course that shall break joints with the course below.

3. Solid unit masonry shall comply with the standard Building Code Requirements for Masonry, ANSI A41.1.

4. Rubble stone walls shall be 4 inches (102 mm) thicker than is required for solid brick or concrete walls of the same respective heights, but in no part less than 16 inches (406 mm).

R4407.4.2.9 Substitutions.

R4407.4.2.9.1 Where, for architectural reasons or otherwise, it is desirable to reduce the area of any required tie column or tie beam below the specified requirements, the building official may grant such reduction, provided that the area of concrete omitted shall be replaced by reinforcing

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~~or structural steel in the ratio 1:(n-1) where "n" is defined as the Modular Ratio of Elasticity (Esteel/Econcrete).~~

~~**R4407.4.2.9.2** Where it is desired to substitute for the #5 reinforcing as required by this section, three #4 bars may be substituted to replace two #5 bars.~~

~~**R4407.4.2.10 Wall additions.** Where new walls are connected to existing walls, such connection shall be by means of a starter column of minimum 8 by 8 inches (203 by 203 mm) dimension reinforced with two #5 bars.~~

~~**R4407.4.2.11 Chases, recesses and openings.**~~

~~**R4407.4.2.11.1** Unit masonry walls required to be a minimum of 8 inches (203 mm) thick, such as exterior walls, fire walls and bearing walls, may be chased or recessed not deeper than one-half the wall thickness for an area not exceeding 8 square feet (0.74 m2), provided the horizontal dimension of the chase or recess does not exceed 4 feet (1219 mm) and provided the chasing shall not reduce the dimension of tie beams and tie columns to less than herein required, except as follows:~~

~~**Exception:** Four inch (102 mm) deep chases or recesses in 8 inch (703 mm) unit masonry walls may be constructed with 4 inch (102 mm) unit masonry panels provided such - inch (102 mm) unit masonry panel does not exceed 5 foot (1524 mm) in width, does not exceed 8 foot (2.4 m) in height, is bonded on one vertical side to 8 inch (203 mm) masonry or a tie column, and is not load bearing. Where such panel exceeds 2 foot (610 mm) in width at locations 20 foot (6.1 m) or more above grade in exterior walls, resistance to wind load shall be considered in the design, and a minimum of 4 inch by 8 inch (102 mm by 203 mm) tie column with two #5 vertical bars shall be provided in the free standing end of such 4 inch (102 mm) wall.~~

~~**R4407.4.2.11.2** Openings shall have lintels of reinforced concrete. Where such lintel is precast or formed separately from a tie beam, it shall bear not less than nominal 8 inches (203 mm) on the masonry, at each end except as may otherwise be approved for compliance with this code by Product Approval, or after rational analysis, but not less than 4 inches (102 mm). Where such lintel is formed integrally with the tie beam by deepening the tie beam above the opening, and the tie beam itself is capable of safely supporting all loads, the beam may span up to 6 foot (1.8 m) in length and may be deepened not to exceed 8 inches (203 mm) without additional reinforcing. Where the tie beam is deepened in excess of 8 inches (203 mm) with a span less than 6 foot (1.8 m) in length, and the tie beam itself is capable of supporting all loads, the dropped portion shall contain a #3 horizontal bar at the bottom, bent up at each end and fastened to the upper tie beam steel or two #4 horizontal bars. The dropped portion shall bear at least 4 inches (102 mm) on the masonry at each end. Where the span is in excess of 6 foot (1.8 m), the principal beam reinforcing shall be at the bottom of the beam.~~

~~**R4407.4.2.12 Glass block.**~~

~~**R4407.4.2.12.1** Masonry of glass unit masonry may be used in nonload-bearing exterior or interior walls and in openings which might otherwise be filled with windows, either isolated or in continuous bands, provided the glass unit masonry panels have a thickness of not less than 31/2 inches (89 mm) at the mortar joint and the mortared surfaces of the units are satisfactorily treated for mortar bonding.~~

~~**R4407.4.2.12.2** Glass unit masonry panels for exterior walls shall have a Product Approval.~~

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R4407.4.2.12.3 Exterior unit masonry panels shall be set in recesses at the jambs and, for panels exceeding 10 feet (3 m) in horizontal dimension between supports, at the head as well, to provide a bearing surface at least 1 inch (25 mm) wide along the panel edges; except that when approved by the building official for panels exceeding neither 100 square feet (9.3 m2) in area nor 10 feet (3 m) in either horizontal or vertical dimension, and situated four stories or less, and less than 52 feet (15.8 m) above grade level, anchorage may be provided by means of non - corrodible perforated metal strips.

R4407.4.2.12.4 Glass unit masonry panels shall have reinforcement in the mortar joints spaced not more than 2 feet (610 mm) apart vertically and below and above any openings within a pane. The reinforcement shall consist of two parallel longitudinal galvanized steel wires, No. 9 gauge or larger, spaced 2 inches (51 mm) apart, and welded to No. 14 or heavier cross wires at intervals not exceeding 8 inches (203 mm), or the equivalent approved by the building official.

R4407.4.2.12.5 Glass unit masonry shall be laid in only Type M or S mortar or equivalent approved material. Both vertical and horizontal mortar joints shall be at least 1/4 inch (6 mm) and not more than 3/8 inch (9.5 mm) thick and shall be completely filled.

R4407.4.2.12.6 Every exterior glass unit masonry panel shall be provided with expansion joints at the sides and top. Expansion joints shall be entirely free of mortar, and shall be filled with resilient material.

R4407.4.2.12.7 Glass masonry units required to provide a fire resistance rating shall comply with Section R4407.4.1.12.8 or shall be fire tested and listed for their intended use.

R4407.4.2.12.8 View panels in 1-hour fire-resistant walls shall be limited to glass unit masonry panels installed in steel channels, or panel anchor framing may be used where a 3/4 hour fire rating is required. Three and seven-eighths inch (98 mm) thick glass masonry unit shall be limited to 120 square feet (1.1 m2) with no dimension greater than 12 feet (3.7 m) for masonry wall construction or to 94 square feet (8.7 m2) with no dimension greater than 10.75 feet (3.3 m) for non-masonry wall construction. Three and one-eighths inch (79 mm) thick glass masonry units shall be limited to 100 square feet (9.3 m2) with no dimension greater than 10 feet (3 m) for masonry wall construction or to 94 square feet (8.7 m2) with no dimension greater than 10.75 feet (3.3 m) for non-masonry wall construction. Three inches (76 mm) thick glass masonry units shall be limited to 100 square feet (9.3 m2) with no dimension greater than 12 feet (3.7 m) for masonry wall construction or to 94 square feet (8.7 m2) with no dimension greater than 10 feet (3 m) for non-masonry wall construction.

View panels in 2-hour fire resistant walls shall be limited to glass masonry units installed in steel channels and with a water curtain in conformance with NFPA 13 on each side at interior walls or at the interior of exterior walls. Three and seven-eighths inch (98 mm) thick glass masonry units shall be limited to 100 square feet (9.3 m2) with no dimension greater than 10 feet (3 m).

The view panel assembly shall not exceed 25 percent of the wall separating a tenancy from a corridor or a corridor from an enclosed vertical opening or one fire rated area from another fire rated area.

Maximum 3/4-hour fire-rated glass masonry units construction shall be used at non-masonry wall construction. Panel anchors shall be provided at sill and jambs in non-masonry wall

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~~construction using panel anchor framing. A fire retardant sealant shall be used at all channel and panel anchor framing. Expansion material at heads and jambs shall be either fibrous glass or mineral wool. All fire rated glass masonry units and panels shall conform to UL No. 9 and ASTM E 163.~~

~~**R4407.4.2.12.9** Interior glass masonry unit panels having thickness of 37/8 inches (98 mm) shall not exceed 250 square feet (23.2 m2) of unsupported wall surface and interior glass masonry unit panels having thickness of 31/8 inches (79 mm) shall not exceed 150 square feet (13.9 m2) of unsupported wall surface nor more than 25 feet (7.6 m) in length nor more than 20 feet (6.1 m) in height between supports.~~

~~**R4407.4.2.13 Grill block.**~~

~~**R4407.4.2.13.1** Decorative grills or screens constructed of unit masonry laid with cells open through the wall shall be as set forth herein or designs shall be based on rational analysis to resist applicable loads and computations shall be submitted to the building official for approval.~~

~~**R4407.4.2.13.2** Unit masonry grills or screens as described in this paragraph shall not be load bearing.~~

~~**R4407.4.2.13.3** Unit masonry in exterior wall shall be laid in Type M or S mortar.~~

~~**R4407.4.3 Interior bearing walls.** Interior bearing walls shall be constructed as specified in Section R4407.4.2 for exterior walls, except that interior bearing walls in one-story building of Group H or I occupancy, where not required to be more than 1 hour fire resistive, may be constructed of 4 inch (162 mm) concrete block not exceeding 9 feet (2.7 m) in height, capped with a reinforced concrete beam not less than 4 inches (102 mm) in width nor less than 12 inches (305 mm) in height, reinforced with two 1/2 inch rods (12.7 mm), and such walls shall support only a roof or ceiling not in excess of 700 pounds per lineal foot (10.2 kN/m) with no chases or recesses.~~

~~**R4407.4.5 Panel walls.**~~

~~**R4407.4.5.1** Panel walls of unit masonry shall be not less than 8 inches (203 mm) thick and shall be limited in panel dimension as set forth in Section R4407.4.2.~~

~~**R4407.4.5.2** Panel walls of reinforced concrete shall be not less than 4 inches (102 mm) thick nor less than required by design as specified in Section R4405.~~

~~**R4407.4.6 Veneered walls.**~~

~~**R4407.4.6.1 Masonry backing.**~~

~~**R4407.4.6.1.1** Veneering or facing on masonry backing shall not be considered as adding any strength to such walls and shall be limited in height above foundations or between proper and adequate supports to 30 feet (9.1 m). Veneering shall be securely anchored to masonry backing by means of substantial, non-corroding metal wall ties, spaced not farther apart than 16 inches (406 mm) vertically or 24 inches (610 mm) horizontally.~~

~~**R4407.4.6.1.2** Tile veneering, not more than 1 inch (25 mm) thick with individual units not exceeding 20 inches (508 mm) in any dimension and having not more than 200 square inches~~

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(1290 cm2) of surface area with corrugations or scoring on the back side thereof, need not be anchored in accordance with the above requirements but shall be cemented solid to the backing with Portland cement mortar so as to provide a continuous integral support to the backing.

R4407.4.6.2 Wood backing.

R4407.4.6.2.1 In all cases, before applying masonry veneer, a substantial waterproofed paper or asphalt saturated felt, weighing not less than 14 pounds per 100 square feet (0.68 kg/m2) shall be applied horizontally, shingle fashion, over diagonal sheathing. Horizontal joints in the paper or felt shall be lapped not less than 4 inches (102 mm) and vertical end joints not less than 6 inches (152 mm).

R4407.4.6.2.2 Masonry veneer shall be not less than 33/4 inches (95 mm) thick and shall be bonded to the backing by means of substantial non-corroding metal wall ties spaced not farther apart than 16 inches (406 mm) vertically and 24 inches (610 mm) horizontally.

R4407.4.8 Fences.

R4407.4.8.1 Masonry fences so located on a property that such fence, at the proposed height or by a future addition to height, could be used as a wall of a building shall be constructed with foundations and tie columns as provided for an exterior wall. Such fence shall be capped with a coping beam not less than 64 square inches (413 cm2) in cross section reinforced with a minimum of two #4 rods, when not exceeding a height of 5 feet (1.5 m), or shall be capped by a tie beam as provided for exterior walls if exceeding a height of 5 feet (1.5 m).

R4407.4.8.2 Masonry fences, so located on a property that by zoning regulation such fence could not be used as a wall of a building, shall be constructed as follows:

R4407.4.8.2.1 Fences not exceeding 5 feet (1.5 m) in height shall be 8 inches (203 mm) thick and shall not be required to have tie columns, but shall be required to have a coping as provided herein; or such fences may be 4 inches (102 mm) thick with tie columns and coping not less than 8 inches (203 mm) thick.

R4407.4.8.2.2 Fences exceeding 5 feet (1.5 m) in height shall be not less than 8 inches (203 mm) thick and shall have tie columns and tie beams as required for exterior walls.

R4407.4.9 Other masonry walls. Walls of masonry materials or arrangements of masonry units other than those specifically set forth in this section shall be in conformance with the general provisions of this code, may be classified by the subject to all or any of the requirements therefor to and any such additional requirements as the building official may prescribe.

SECTION R4407.5
HIGH-VELOCITY HURRICANE ZONES — REINFORCED UNIT MASONRY

R4407.5.1 Standards. The provisions of TMS 402/ACI 530/ASCE 5, and TMS 602/ACI 530.1/ASCE6 are hereby adopted as a minimum for the design and construction of reinforced unit masonry. In addition to TMS 402/ ACI 530/ ASCE 5 and TMS 602/ACI 530.1/ASCE6 reinforced unit masonry structures shall comply with Sections R4407.2

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~~**Exception:** Unless otherwise specified by the designing architect or engineer, where plan review and inspections are performed by a local building department in accordance with Sections 106 and 109, the provisions of TMS 402/ ACI 530/ASCE 5/TMS 402, Chapter 1, Section 1.18 and TMS 602/ ACI 530.1/ASCE 6/ Sections 1.5 and 1.6 shall not apply.~~

~~**R4407.5.2 General.** Reserved.~~

~~**R4407.5.3** The design of buildings and structures of reinforced unit masonry shall be by a professional engineer or registered architect.~~

~~**R4407.5.4 Special inspector.** A Florida-registered architect or professional engineer shall furnish inspection of all reinforced unit masonry structures.~~

~~**R4407.5.5 Concrete masonry strength.** Concrete masonry strength shall be determined by unit strength method from TMS 602/ACI 530.1/ ASCE 6 Section 1.4 or in accordance with ASTM C 1314.~~

~~**R4407.5.6. Reinforcement.** Reinforcement shall comply with TMS 402/ACI 530/ ASCE 5 and TMS 602/ ACI 530.1/ ASCE 6 except as modified herein.~~

~~**R4407.5.6.1** Development of bars in tension and compression shall be in accordance with TMS 402/ASCE 530/ ASCE5 Section 2.1.9.3 with the following changes to the factor y of Equation 2-12.~~

~~y = 1.0 for No. 3 (M#10) through No. 5 (M#16) bars;~~

~~y = 1.04 for No. 6 (M#19) through No. 7 (M#22) bars; and~~

~~y = 1.2 for No. 8 (M#25) through No. 11 (M#36) bars~~

~~Where epoxy coated bars are used, lap length shall be increased by 50 percent.~~

~~**R4407.5.6.2** Splices of reinforcement shall be in accordance with TMS 402/ ACI 530/ ASCE 5. Lap splices, welded splices, or mechanical splices are permitted in accordance with the provisions of TMS 402/ ACI 530/ ASCE 5 Section 2.1.9.7. Welding shall conform to AWS D1.4.~~

~~**R4407.5.6.3** Lap splices shall be in accordance with TMS 402/ ACI 530/ ASCE 5, Section 2.1.9.7.1.1 with the modifications of Section 2122.4.1 to the factor y of Equation 2-12. In no case shall the length of the lapped splice be less than 48 bar diameters, but not less than 12 inches.~~

~~**R4407.5.6.4 Joint reinforcement.** Horizontal joint reinforcement shall be provided at every other course. Joint reinforcement shall be a minimum of No. 9 gauge and shall~~

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~~comply with TMS 602/ACI 530.1/ ASCE 6 Sections 2.4C through 2.4F. Joint reinforcement shall be placed in accordance with TMS 602/ACI 530.1/ ASCE 6 Section 3.4 B.7.~~

~~**R4407.5.7** Concentrated loads shall be in accordance with TMS 402/ ACI 530/ ASCE 5 Sections 1.9.7.2 and 2.1.8 and shall not be assumed distributed across continuous vertical joints, including stack bond joints, unless reinforcing elements are designed and provided to distribute such loads.~~

~~**R4407.5.8** Reinforced masonry bearing walls shall have a nominal thickness of not less than 8 inches (203 mm).~~

~~**R4407.5.9 Anchorage requirements.** Anchorage shall be in accordance with TMS 402/ ACI 530/ ASCE 5. Loading shall comply with TMS 402/ ACI 530/ ASCE 5 Section 1.7 and the following.~~

~~**R4407.5.9.1** Reinforced masonry walls shall be securely anchored to adjacent structural members such as roofs, floors, columns, pilasters, buttresses and intersection walls.~~

~~**R4407.5.9.2** Masonry walls shall be anchored to all floors and roofs that provide lateral support to such walls.~~

~~**R4407.5.9.3** Such anchorage shall provide a positive direct connection capable of resisting the horizontal forces as required in Chapter 16 (High Velocity Hurricane Zones), or a minimum force of 200 pounds per lineal foot (2919 N/m) of wall, whichever is greater.~~

~~**R4407.5.9.4** Required anchors shall be embedded in reinforced grouted cells. Anchor bolts shall be installed in accordance with TMS 602/ ACI 530.1/ ASCE 6 Section 3.4 D~~

~~**R4407.5.9.5** Wood framing connected by nails shall not be considered as acceptable anchorage.~~

~~**R4407.5.10 Mortar and grout.**~~

~~**R4407.5.10.1** Mortar materials shall comply with TMS 602/ ACI 530.1/ ASCE 6 Section 2.1. Grout materials shall comply with TMS 602/ ACI 530.1/ ASCE 6 Section 2.2.~~

~~**R4407.5.10.2** Vertical cells to be grouted shall provided vertical alignment sufficient to maintain clear, unobstructed, continuous, vertical cores measuring not less than 2 ½ inches by 3 inches (51 mm by 76 mm) for fine aggregate grout and 3 inches by 3 inches for coarse aggregate grout as defined by ASTM C 476. The architect or engineer may specify other grout space sizes shall be permitted provided they comply with TMS 402/ ACI 530/ ASCE 5 Section 1.19 and TMS 602/ ACI 530.1/ ASCE 6 Section 3.5C.~~

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~~**R4407.5.10.3** Placing of mortar and masonry units shall comply with TMS 602/ ACI 530.1/ ASCE 6 Section 3.3.~~

~~**R4407.5.10.4 Grout placement.** Grout placement shall be in accordance with TMS 402/ ACI 530/ ASCE 5 and TMS 602/ ACI 530.1/ ASCE 6.~~

~~**R4407.5.10.5 Confinement.** Confine grout to the areas indicated on the Project Drawings. Use material to confine grout that permits bond between masonry units and mortar.~~

~~**R4407.5.10.6** Unless otherwise required, mix grout other than self-consolidating grout to a consistency that has a slump between 8 and 11 in. (203 and 279 mm). Self-consolidating grout shall comply with TMS 602/ ACI 530.1/ ASCE 6~~

~~**R4407.5.10.7** Grout shall be placed before any initial set has occurred, but in no case more than 1-1/2 hours after the mix-designed water has been added.~~

~~**R4407.5.10.8** Grouting shall be a continuous operation in lifts not exceeding 5 feet (1.5 m) and a maximum pour of 12 feet 8 inches (3.8 m). Grout placement shall comply with TMS 602/ ACI 530.1/ ASCE 6.~~

~~**R4407.5.10.9** Grouting shall be consolidated between lifts by puddling, rodding or mechanical vibration.~~

~~**R4407.5.10.10**. Grout keys shall be formed between grout pours. Grout keys shall be formed between grout lifts when the first lift is permitted to set prior to placement of the subsequent lift.~~

~~1. Form a grout key by terminating the grout a minimum of 1½ in. (38.1 mm) below a mortar joint.~~

~~2. Do not form grout keys within beams.~~

~~3. At beams or lintels laid with closed bottom units, terminate the grout pour at the bottom of the beam or lintel without forming a grout key.~~

~~**R4407.5.11 Bearing.** Precast floor and roof units supported on masonry walls shall provide minimum bearing of 3 inches (76 mm) and anchorage in accordance with Section R4407.5.9.4.~~

~~**R4407.5.12** Intersecting walls shall comply with TMS 402/ ACI 530/ ASCE 5 Section 1.9.4.~~

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Date Submitted	7/9/2012	**Section**	4408	**Proponent**	Michael Goolsby
Chapter	44	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Eliminating unnecessary duplication of Chapter 44 HVHZ provisions

Rationale

Since the inception of the FBC, the content of Chapter 44 of the FBC, R has been a duplication of the sections contained in the FBC, Building volume. This proposed modification is intended to maintain the continuation of the current level of safety for the protection of life and property unchanged. Importantly, the proposed modification eliminates the need to unnecessarily duplicate more than one-hundred pages into the FBC, R volume, thereby reducing the size of the text contained in the FBC. Additionally, the proposed modification prevents the need to replace all of the non-wind related sections which were removed by legislative directive with dozens of individual modifications, each requiring review and approval; this process would otherwise be unavoidable in order to create a crucial integration of applicable and relevant building code sections into Chapter 44 requirements. In short, this proposed modification is a simplified approach resulting in identical code requirements but through a less time consuming, less complicated and less duplicative process.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to building and property owners relative to cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

It does so by ensuring direction to applicable sections of the code are provided.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

It does so by eliminating the need to unnecessarily duplicate building code provisions and affects a reduction in the number of code pages to be compiled, reviewed, edited and printed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification does not curtail the use of any material, products, methods or systems of construction already deemed acceptable by the Florida Building Code or any alternate materials, design and methods of construction and equipment acceptable to the code official.

Does not degrade the effectiveness of the code

This modification does not degrade the effectiveness of the code; instead, it maintains the applicability of relevant base code requirements as has been the case since the first edition of the Florida Building Code.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5015-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

Creates a reference to Chapter 22 of the FBC-B. The FBC-R was created to be a free standing document and as such should include the language if it meets the criteria for a Florida specific amendment.

S5015 Text Modification

Page: 1

SECTION R4408

HIGH-VELOCITY HURRICANE ZONES — STEEL

R4408.1 ~~General~~ Refer to Chapter 22 of the Florida Building Code, Building. ~~Steel construction.~~

~~**R4408.1.1 Design.** Steel and iron members shall be designed by methods admitting of rational analysis according to established principles or methods.~~

~~**R4408.1.2** The design, fabrication and erection of iron and steel for buildings and other structures shall be as set forth in this section. The requirements set forth in Sections R4408.2 through R4408.8 herein, inclusive, apply to structural steel for buildings and other structures. Sections R4408.9 and R4408.10, apply to cold-formed members of sheet or strip steel and light-gauge steel construction.~~

~~**R4408.1.3** The following standards, as set forth in Chapter 43 of this code, are hereby adopted.~~

~~1. American Institute of Steel Construction, AISC:~~

~~a. Manual of Steel Construction, 2005 Thirteenth Edition AISC, including Specification for Structural Steel Buildings, 360-05~~

~~b. Serviceability Design Considerations for Low-Rise Buildings, AISC.~~

~~c. Engineering for Steel Construction, AISC.~~

~~d. Detailing for Steel Construction, AISC.~~

~~e. Iron and Steel Beams—1873 to 1952, AISC.~~

~~f. Torsional Analysis of Steel Members, AISC.~~

~~g. Engineering for Steel Construction, AISC.~~

~~h. Detailing for Steel Construction, AISC.~~

~~i. Iron and Steel Beams—1873 to 1952, AISC.~~

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~~j. Plastic Design of Braced Multistory Steel Frames, AISC.~~

~~k. Torsional Analysis of Steel Members, AISC.~~

~~2. American Iron and Steel Institute, AISI:~~

~~e. Cold-Formed Steel Design Manual, AISI~~

~~f. Specifications for the Design of Light-gauge Cold-Formed Stainless Structural Members, AISI.~~

~~g. Specification for the Criteria for Structural Application of Steel Cables for Buildings, AISI.~~

~~i. Design Manual for Structural Tubing, AISI.~~

~~3. American National Standards Institute/American Society of Civil Engineers, ANSI/ASCE.~~

~~a. Specifications for the Design and Construction of Composite Slabs and Commentary on Specifications for the Design and Construction of Composite Slabs, ANSI/ASCE 3.~~

~~b. Specifications for the Design of Cold-Formed Stainless Steel Structural Members, ANSI/ASCE 8.~~

~~4. American National Standards Institute/American Welding Society, ANSI/AWS~~

~~a. Standard Welding Procedure and Performance Qualification, AWS B2.1.~~

~~b. Recommended Practice for Stud Welding, AWS C5.4.~~

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~~c. Structural Welding Code - Steel, ANSI/AWS D1.1.~~

~~d. Structural Welding Code - Sheet Metal, AWS D1.3.~~

~~e. Structural Welding Code – Reinforcing Steel, ANSI/AWS D1.4~~

~~f. Specification for Welding of Sheet Metal, AWS D9.1.~~

~~g. Standard for Qualification of Welding Procedures and Welders for Piping and Tubing, AWS D10.9.~~

~~5. American Society for Testing and materials, ASTM.~~

~~a. Standard Specification for General Requirements for Rolled Steel Plates, Shapes, b. Sheet Piling and Bars for Structural Use, ASTM A 6.~~

~~b. Standard Specifications for High Strength Bolts for Structural Steel Joints, ASTM A 325.~~

~~c. Standard Specification for Heat Treated Steel Structural Bolts. 150 KSI Minimum Tensile Strength, ASTM A 490.~~

~~d. Standard Specification for General Requirements for Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process, ASTM A 525.~~

~~6. National Association of Architectural Metal Manufacturers, NAAMM.~~

~~a. Metal Grating Manual, NAAMM.~~

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~~7. Rack Manufacturers Institute/American National Standards Institute, RMI/ANSI.~~

~~a. Industrial Steel Storage Racks Manual, RMI.~~

~~b. Manual of Safety Practices - A code of Practices for the Use of Industrial and Commercial Steel Storage Racks, RMI/ANSI MH16.2.~~

~~8. Research Council on Structural Connections of the Engineering Foundation, RCSCEF.~~

~~a. Specification for Structural Joints Using ASTM A 325 or A 490 Bolts, RCSCEF.~~

~~10. Steel Deck Institute, Inc., SDI.~~

~~a. Standard Practice Details, SDI.~~

~~b. SDI Manual of Construction with Steel Deck, SDI.~~

~~c. Deck Damage and Penetrations, SDI.~~

~~d. Steel Deck Institute Design Manual.~~

~~e. LRFD Design Manual for Composite Beams and Girders with Steel Deck, SDI.~~

~~f. Diaphragm Design Manual, SDI.~~

~~11. Steel Joist Institute, SJI.~~

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~~a. Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders, SJI.~~

~~b. Structural Design of Steel Joist Roofs to Resist Ponding Loads, Technical Digest No. 3, SJI.~~

~~g. Vibration of Steel Joist-Concrete Slab Floors, Technical Digest No. 5, SJI.~~

~~h. Structural Design of Steel Joist Roofs to Resist Uplift Loads, Technical Digest No. 9, SJI.~~

~~i. Welding of Open Web Steel, Technical Digest No. 8, SJI.~~

~~j. Handling and Erection of Steel Joists and Joist Girders, Technical Digest No. 9, SJI.~~

~~k. 60 Year Steel Joist Manual, SJI.~~

~~b. A Guide to the Shop Painting of Structural Steel, SSPC/AISC.~~

~~13. Underwriters Laboratories, Inc., UL.~~

~~a. Test for Uplift Resistance of Roof Assemblies, UL 580.~~

~~14. Welded Steel Tube Institute, Inc., WSTI.~~

~~a. Manual of Cold Formed Welded Structural Steel Tube.~~

~~SECTION R4408.2~~

~~HIGH-VELOCITY HURRICANE ZONES — MATERIAL~~

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~~**R4408.2.1 Steel**. Steel shall conform to the physical requirements set forth in the applicable standard in Section R4408.1.3.~~

~~**R4408.2.2 High strength steel bolts.** High strength steel bolts shall conform to the requirements set forth in the applicable standards of Section R4408.1.3.~~

~~**R4408.2.3 Used and damaged material.** All steel shall be straight and true, and any section damaged to be out of shape shall not be used. Steel previously used or fabricated for use or fabricated in error shall not be used except with the approval of the building official. Filled holes or welds shall not be concealed. Straightened or retempered fire-burned steel shall not be used except with the approval of the building official.~~

~~**R4408.2.4 Tests**. The building official may require tests and/or mill records to determine the quality of materials.~~

~~**R4408.2.5 Ribbed bolts**. Ribbed bolts shall be made from carbon manganese steel with a minimum tensile strength of 70,000 psi (482.7 MPa).~~

~~**SECTION R4408.3**~~

~~**HIGH-VELOCITY HURRICANE ZONES — DESIGN LOADS**~~

~~**R4408.3.1** Design shall be based on the dead, live, wind and other loads set forth in Section R4403 and the additional stress considerations set forth in this section.~~

~~**SECTION R4408.4**~~

~~**HIGH-VELOCITY HURRICANE ZONES — MINIMUM THICKNESS OF MATERIAL**~~

~~**R4408.4.1** The minimum thickness of material shall not be less than as set forth in the applicable standards listed in Section R4408.1.3 except as otherwise set forth herein.~~

~~**SECTION R4408.5**~~

~~**HIGH-VELOCITY HURRICANE ZONES — CONNECTIONS**~~

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~~**R4408.5.1** Connections shall conform to the requirements of the applicable standards set forth in Section R4408.1.3.~~

~~**R4408.5.2** A Florida registered architect or licensed engineer shall inspect the welding and high strength bolting of structural steel framing and welding, bolting and fastening of lightweight material systems and metal sidings of buildings with areas exceeding 1,000 square feet (93 m2).~~

~~**R4408.5.3** Welding in the shop or field may be done only by AWS certified welders.~~

~~**SECTION R4408.6**~~

~~**HIGH-VELOCITY HURRICANE ZONES — TUBULAR COLUMNS**~~

~~**R4408.6.1** Tubular columns and other primary compression members, excluding secondary posts and struts not subject to bending and whose design load does not exceed 2,000 pounds (8900 N), shall have a minimum least dimension of 21/2 inches (64 mm) and a minimum wall thickness of 3/16 inch (4.8 mm).~~

~~**R4408.6.2** Tubular members when filled with concrete shall have 1/4 inch (6.4 mm) diameter pressure relief holes drilled through the shell, within 6 inches (152 mm) of the top and bottom of the exposed length of the member and one hole at mid-height.~~

~~**R4408.6.3** Concrete fill in tubular members shall not be assumed to carry any of the load except in compression members having a least dimension of 8 inches (203 mm) or greater and having a 1-inch (25 mm) inspection hole in the plate at each end.~~

~~**SECTION R4408.8**~~

~~**HIGH-VELOCITY HURRICANE ZONES — OPEN-WEB STEEL JOISTS**~~

~~**R4408.8.1 Standards**. Open-web steel joists shall comply with the standards set forth in Section R4408.1.3.~~

~~**R4408.8.2** Statements of responsibilities of architects and professional engineers on the design of structural systems using open-web steel joists.~~

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~~**R4408.8.2.1** The structural construction documents shall designate the standards for joist design and shall indicate layout, end supports, anchorage, bridging requirements, etc., including connections to walls. The structural construction documents shall indicate special requirements for concentrated loads, openings, extended ends and resistance to uplift.~~

~~**R4408.8.2.2** The structural engineer of record and/or the architect of record shall require structural submittals for the structural engineer of record's review and/or the architect of record's review as an indication that his or her intent has been understood and that the specified criteria have been used. The structural submittals, unless catalog submittals, shall bear the impressed seal, signature and date of the specialty engineer who prepared them.~~

~~**R4408.8.2.3** The structural submittals shall identify the specific project, shall list the design criteria and shall show all joist location information and details necessary for proper installation.~~

~~**R4408.8.3 Design.**~~

~~**R4408.8.3.1** Open web steel joist systems shall be designed to accommodate the loads and forces set forth in Section R4403.~~

~~**R4408.8.3.2** Net uplift forces for all zones, applied to the joist systems, shall be clearly indicated on the structural construction documents.~~

~~**R4408.8.3.3** Where the net uplift force is equal to or greater than the gravity load of construction, all web and bottom chord members shall comply with slenderness ratio requirements for top chord and for compression members other than top chord as provided for in the standards set forth in Section R4408.1.3(11).~~

~~**R4408.8.3.4** The slenderness ratio about the horizontal axis can be used in determining the capacity of the top chord provided the top chord is stayed laterally by the deck system. The top chord for superimposed dead and live loads shall be considered to be stayed laterally if:~~

~~1. A poured in place concrete slab is in direct contact with the top chord.~~

~~2. A light gauge steel deck complying with Section R4408.9 is fastened to the top chord.~~

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3. Any other approved deck system such that attachments of the top chord to the deck are capable of resisting a lateral force specified in the standard set forth in Section R4408.1.3 and the spacing of the fasteners does not exceed 24 inches (610 mm) along the chord.

R4408.8.3.5 When the bottom chord under net uplift loads is in compression, the bottom chord shall be stayed laterally by a bracing system adequately anchored at each end.

R4408.8.3.6 Fastenings shall be bolting, welding or other approved fastening device that provides a resistance to lateral movement as required by rational analysis or by test, but not less than 400 pounds per foot (5838 N/m).

R4408.8.4 Connections. The joints and connections of members of steel joists shall be made by welding or bolting.

R4408.8.5 Bridging.

R4408.8.5.1 All bridging and anchors shall be completely installed before application of any construction loads. Bridging shall secure the chords against lateral movement and shall position and hold the joists vertical and in a straight line.

R4408.8.5.2 Bridging members shall be of material having a thickness not less than:

1. 1/8 inch (3.2 mm) for hot-rolled sections.

2. 16 gauge for cold-formed sections.

3. 1/2 inch (12.7 mm) diameter for round members.

R4408.8.5.3 Bridging shall be connected to the chords of the joists by welding, bolting or other positive mechanical means. Each attachment shall be capable of resisting a horizontal force specified in the standard set forth in Section R4408.1.3.

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R4408.8.5.4 Bridging shall be connected to the chords of the joists by bolting or welding at all points of contact and shall be capable of transmitting the forces required of the bridging members. The ends of all bridging lines shall terminate at walls or beams and shall be anchored thereto and where anchorage is not possible, stability shall be provided by additional bracing.

R4408.8.5.5 Where uplift forces are a design requirement, a single line of continuous bottom chord bridging shall be provided near the first panel points.

R4408.8.6 End supports and anchorage.

R4408.8.6.1 Joists shall not bear directly on unit masonry unless masonry is designed as engineered unit masonry with properly reinforced, grout-filled continuous bond beam.

R4408.8.6.2 The ends of every joist shall be bolted, welded or encased in concrete at each point of bearing to provide not less resistance in any direction than 50 percent of the Steel Joist Institute rated end reaction horizontally and 100 percent of the net uplift reaction specified in the structural construction documents.

R4408.8.6.3 The ends of joists shall have a minimum bearing, on reinforced concrete and steel supports as specified in the standard set forth in Section R4408.1.3(11).

R4408.8.7 Fabrication. Steel joists shall be manufactured by plants having a certificate of competency issued by the authority having jurisdiction.

SECTION R4408.9

HIGH VELOCITY HURRICANE ZONES — COLD-FORMED STEEL CONSTRUCTION

R4408.9.1 Cold-formed steel construction shall include individual structural members, structural decks or wall panels, and nonstructural roofing, siding and other construction elements formed from sheet or strip steel and as set forth in Section R4408.1.3(2).

R4408.9.2 Standards. Cold-formed steel used in structural applications shall conform to the standards set forth in Section R4408.1.3(2).

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~~**R4408.9.2.1** Galvanizing as referred to herein is to be zinc coating conforming to the standard set forth in Section R4408.1.3(5)(d).~~

~~**R4408.9.3 Individual structural members.** Design, fabrication and erection of individual cold-formed steel structural members shall be as set forth herein.~~

~~**R4408.9.3.1** All structural members shall be positively connected to resist the loads set forth in Section R4403.~~

~~**R4408.9.3.2** All connections shall be by welding, riveting, bolting or other approved fastening devices or methods providing positive attachment and resistance to loosening. Fasteners shall be of compatible material.~~

~~**R4408.9.3.3** Cables and rods shall not be used as lateral bracing in habitable structures. Lateral bracing, when used, shall have a slenderness ratio of 300 or less, unless restricted by any other section of this code.~~

~~**R4408.9.3.4** Doors and windows in pre-engineered metal building systems shall be designed as a structural component member and shall conform to all requirements in this section.~~

~~**R4408.9.3.5** All doors shall be anchored as part of the frame in the closed position.~~

~~**R4408.9.3.6** No increase in strength shall be allowed for the effect of cold work.~~

~~**R4408.9.4 Structural sheets.** Decks and panels with or without an approved fill material may be designed as diaphragms in accordance with Diaphragm Design Manual of the Steel Deck Institute, provided other limitations in this code are complied with.~~

~~**R4408.9.4.1** Poured fill on roof and floor decks shall not be assumed to have any structural value to support or resist vertical or lateral loads or to provide stability or diaphragm action unless so designed, and poured fill and/or applied materials do not degrade when subjected to moisture.~~

~~**R4408.9.4.2** Positive attachment of sheets shall be provided to resist uplift forces. Attachment shall be as set forth in Section R4408.9.3.1 and as required by rational analysis, and/or tests, but not less frequently than the following maximum spacing:~~

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~~1. One fastener shall be placed near the corner of each sheet or at overlapping corners of sheets.~~

~~2. Along each supporting member, the spacing of fasteners shall not exceed 8 inches (203 mm) on centers at ends of sheets or 12 inches (305 mm) on centers.~~

~~3. The spacing of edge fasteners between panels, and between panels and supporting members, parallel to the direction of span, where continuous interlock is not otherwise provided shall be not more than 12 inches (305 mm) on centers.~~

~~4. Fastening shall be by bolting, welding or other approved fastening device that provides a resistance to lateral movement as required by rational analysis or by test, but not less than 400 pounds per lineal foot (5838 N/m).~~

~~5. Poured lightweight concrete fill will be acceptable as continuous interlock.~~

~~6. Attachment to the supporting structure shall be provided at all perimeters and discontinuities by fasteners spaced at no more than 8 inches (203 mm) on center.~~

~~7. Wall panels shall be attached as set forth in Section R4408.9.4.2(1),(2) and (3).~~

~~**R4408.9.4.3** Metal siding and roof panels shall be not less than 24 gauge.~~

~~**Exception:** Roof panels having an approved fill material designed to act as a diaphragm may use a lighter deck gauge provided that the Product Approval for the fill material allows its use over the same deck gauge, but in no case shall the deck be less than 26 gauge. The permit applicant shall provide the building official with signed and sealed structural calculations for the diaphragm design prepared by a licensed architect or engineer proficient in structural design. The diaphragm design shall comply with the applicable requirements of Section R4403 and Section R4408.~~

~~**R4408.9.4.4** Deflection of metal siding and roof panels shall not exceed L/240.~~

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~~**R4408.9.4.5** The bending stress of metal siding and roof panels shall be designed using a safety factor of not less than 2.5.~~

~~**R4408.9.4.6** Minimum roof decking uplift loads shall comply with the design requirements of Section R4403 utilizing rational analysis, but not less than UL 580 Class 90.~~

~~**R4408.9.4.7** Reserved.~~

~~**R4408.9.4.8** Metal siding and roof panels shall be designed, where possible, to be continuous over two or more spans.~~

~~**R4408.9.5 Nonstructural sheet**s. Steel sheet sections not suitable by rational analysis for self-supporting structural sheets shall be termed roofing and siding. Roofing and siding shall be used only over solid wood sheathing or equivalent backing.~~

~~**R4408.9.5.1** Attachment of sheets shall be as set forth in Section R4408.9.4.2~~

~~**R4408.9.6 Protection of metal.** All members shall be treated with protective paint coatings or equivalent protection except as permitted in Sections R4408.9.6.1 or R4408.9.6.2.~~

~~**R4408.9.6.1** All steel sheets having a thickness of less than 20 gauge, i.e., materials of higher gauge, shall be galvanized in accordance with the standards of Section R4408.1.3(5)(d) herein to provide a minimum coating designation of G90.~~

~~**R4408.9.6.2** Abrasions or damages to the protective coating shall be spot-treated with a material and in a manner compatible to the shop protective coating.~~

~~**R4408.9.7** Welding shall conform to the requirements of Sections R4408.1.3, R4408.5.2 and R4408.5.3.~~

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~~SECTION R4408.10~~

~~HIGH-VELOCITY HURRICANE ZONES — PREENGINEERED, PREFABRICATED METAL BUILDING SYSTEMS AND COMPONENTS (PREENGINEERED STRUCTURES)~~

~~**R4408.10.1 Scope.** Metal buildings (pre-engineered structures) shall include, but not be limited to, tapered or straight web structural steel frames and predominantly cold formed steel secondary components, including, but not limited to, girts, purlins, roof sheets, wall sheets, etc.~~

~~**R4408.10.2 Standards.** Frames and components shall comply with the standards set forth in Section R4408.1.3.~~

~~**R4408.10.3** Structural construction documents for pre-engineered structures shall indicate the necessary measures for adapting the structures to the specific site. The structural construction documents shall indicate all openings, concentrated loads and other special requirements. Foundation conditions assumed in the design shall be indicated as well as the location and magnitude of building reactions on that foundation under all design conditions.~~

~~**R4408.10.5 Design.** A building or component system in this section shall have a structural engineer of record and/or architect of record responsible for the overall design and performance of the entire building including the foundation and the anchorage of the pre-engineered metal systems buildings thereto. The structural engineer of record and/or the architect of record shall provide the structural construction documents necessary for permitting.~~

~~**R4408.10.5.1** Calculations for drift and deflection of the metal system building shall be by the specialty engineer.~~

~~**R4408.10.5.2** Calculations for deflection shall be done using only the bare frame method. Reductions based on engineering judgment using the assumed composite stiffness of the building envelope shall not be allowed. Drift shall follow AISC serviceability design considerations for low-rise buildings. The use of composite stiffness for deflection calculations shall be permitted only when actual calculations for the stiffness are included with the design for the specific project. When maximum deflections are specified by the structural construction documents, calculations shall be included in the design data.~~

~~**R4408.10.5.3** The manufacturer shall design the metal system building and/or component system in accordance with the provisions of Section R4403, and the design shall be signed, dated and sealed by the specialty engineer and reviewed by the structural engineer of record and/or the architect of record. The manufacturer of the metal system building and or component system shall be responsible to provide all reactions to the structural engineer of record and/or the architect of record.~~

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R4408.10.5.4 Fastenings shall be by bolting, welding or other approved fastening device that provides a resistance to lateral movement as required by rational analysis or by test, but not less than 400 pounds per lineal foot (5838 N/m).

R4408.10.7 Fabrication and erection.

R4408.10.7.2 Temporary bracing shall be provided during erection and shall remain in place until all structural frames, purlins, girts, flange braces, cable or rod bracing and sheets used as diaphragms have been installed.

R4408.10.8 Roof sheets, wall sheets, roof panels and wall panels.

R4408.10.8.2 The fusion welding of structural members and structural sheets defined in Section R4408.9.4 and less than 22 gauge (0.0299 inch nominal) in thickness shall have minimum of 5/8 inch (17 mm) diameter welds through weld washers not less than 14 gauge in thickness and 1 inch (25 mm) in diameter, contoured if necessary to provide continuous contact, or an equivalent device.

R4408.10.8.3 Clip mounted standing seam roof sheets shall not be used as diaphragms nor shall they be considered as adequate lateral bracing of the flange of the secondary member to which they are attached unless one or both of these features are designed into the sheathing system and the manufacturer can certify by testing and/or analysis that such capabilities exist and are appropriately defined.

R4408.10.8.4 Structural standing seam roof sheets shall be a minimum of 24 gauge (0.0239 inch nominal) in thickness.

R4408.10.8.5 Direct screw attached roof and wall sheets may be used as diaphragms provided the sheets are a minimum of 24 gauge (0.0239 inch nominal) in thickness. Additionally, these sheets shall be considered to laterally brace the flange of the secondary member to which they are attached.

R4408.10.8.6 See Section R4408.9 for additional requirements for roof sheets, wall sheets, roof panels and wall panels.

R4408.10.9 Roof purlins and wall girts.

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~~**R4408.10.9.1** Adequate bracing shall be provided to the compression flanges of secondary members with special attention to those members subject to uplift or outward pressures where no roof or wall sheets are attached to provide such bracing. Sag rods shall not be considered bracing when located in the neutral axis of the web of the secondary members.~~

~~**R4408.10.9.2** Roof purlins and wall girts shall be laterally braced in addition to relying on deck and panel diaphragm action.~~

~~**R4408.10.9.3** The ends and bearing points of secondary members shall be designed to carry 100 percent of dead, live and collateral loads superimposed on them by wind.~~

~~**R4408.10.9.4** Upward or outward forces of wind are to be calculated without live and collateral loads. When downward or inward forces caused by wind are involved, the dead forces plus collateral load forces must be combined but the roof live load may be omitted.~~

~~**R4408.10.10 Individual structural members.**~~

~~**R4408.10.10.1** Cables and rods shall not be used as lateral bracing in habitable structures. Lateral bracing, when used, shall have a slenderness ratio of 300 or less, unless restricted by any other section of this code.~~

~~**R4408.10.10.3** All doors shall be anchored as part of the frame in the closed position.~~

~~**R4408.10.10.4** No increase in strength shall be allowed for the effect of cold work.~~

~~**R4408.10.10.5** See Section R4408.9 for additional requirements for preengineered metal building systems and components.~~

~~**SECTION R4408.11**~~

~~**HIGH VELOCITY HURRICANE ZONES — CHAIN LINK FENCES**~~

~~**R4408.11.1** Chain link fences in excess of 12 feet (3.7 m) in height shall be designed according to the loads specified in Section R4403.~~

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~~**R4408.11.2** Chain link fences less than 12 feet (3.7 m) in height shall be designed according to the loads specified in Section R4403 or may be constructed to meet the minimum requirements specified in Table R4408.11.~~

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SECTION R4408
HIGH-VELOCITY HURRICANE ZONES — STEEL

R4408.1 ~~General~~ Refer to Chapter 22 of the Florida Building Code, Building. ~~Steel construction.~~

~~**R4408.1.1 Design**. Steel and iron members shall be designed by methods admitting of rational analysis according to established principles or methods.~~

~~**R4408.1.2** The design, fabrication and erection of iron and steel for buildings and other structures shall be as set forth in this section. The requirements set forth in Sections R4408.2 through R4408.8 herein, inclusive, apply to structural steel for buildings and other structures. Sections R4408.9 and R4408.10, apply to cold-formed members of sheet or strip steel and light gauge steel construction.~~

~~**R4408.1.3** The following standards, as set forth in Chapter 43 of this code, are hereby adopted.~~

~~1. American Institute of Steel Construction, AISC:~~

~~a. Manual of Steel Construction, 2005 Thirteenth Edition AISC, including Specification for Structural Steel Buildings, 360-05~~

~~b. Serviceability Design Considerations for Low-Rise Buildings, AISC.~~

~~c. Engineering for Steel Construction, AISC.~~

~~d. Detailing for Steel Construction, AISC.~~

~~e. Iron and Steel Beams - 1873 to 1952, AISC.~~

~~f. Torsional Analysis of Steel Members, AISC.~~

~~g. Engineering for Steel Construction, AISC.~~

~~h. Detailing for Steel Construction, AISC.~~

~~i. Iron and Steel Beams - 1873 to 1952, AISC.~~

~~j. Plastic Design of Braced Multistory Steel Frames, AISC.~~

~~k. Torsional Analysis of Steel Members, AISC.~~

~~2. American Iron and Steel Institute, AISI:~~

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e. Cold-Formed Steel Design Manual, AISI

f. Specifications for the Design of Light-gauge Cold-Formed Stainless Structural Members, AISI.

g. Specification for the Criteria for Structural Application of Steel Cables for Buildings, AISI.

i. Design Manual for Structural Tubing, AISI.

3. American National Standards Institute/American Society of Civil Engineers, ANSI/ASCE.

a. Specifications for the Design and Construction of Composite Slabs and Commentary on Specifications for the Design and Construction of Composite Slabs, ANSI/ASCE 3.

b. Specifications for the Design of Cold-Formed Stainless Steel Structural Members, ANSI/ASCE 8.

4. American National Standards Institute/American Welding Society, ANSI/AWS

a. Standard Welding Procedure and Performance Qualification, AWS B2.1.

b. Recommended Practice for Stud Welding, AWS C5.4.

c. Structural Welding Code - Steel, ANSI/AWS D1.1.

d. Structural Welding Code - Sheet Metal, AWS D1.3.

e. Structural Welding Code – Reinforcing Steel, ANSI/AWS D1.4

f. Specification for Welding of Sheet Metal, AWS D9.1.

g. Standard for Qualification of Welding Procedures and Welders for Piping and Tubing, AWS D10.9.

5. American Society for Testing and materials, ASTM.

a. Standard Specification for General Requirements for Rolled Steel Plates, Shapes, b. Sheet Piling and Bars for Structural Use, ASTM A 6.

b. Standard Specifications for High Strength Bolts for Structural Steel Joints, ASTM A 325.

c. Standard Specification for Heat Treated Steel Structural Bolts. 150 KSI Minimum Tensile Strength, ASTM A 490.

d. Standard Specification for General Requirements for Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process, ASTM A 525.

6. National Association of Architectural Metal Manufacturers, NAAMM.

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a. Metal Grating Manual, NAAMM.

7. Rack Manufacturers Institute/American National Standards Institute, RMI/ANSI.

a. Industrial Steel Storage Racks Manual, RMI.

b. Manual of Safety Practices - A code of Practices for the Use of Industrial and Commercial Steel Storage Racks, RMI/ANSI MH16.2.

8. Research Council on Structural Connections of the Engineering Foundation, RCSCEF.

a. Specification for Structural Joints Using ASTM A 325 or A 490 Bolts, RCSCEF.

10. Steel Deck Institute, Inc., SDI.

a. Standard Practice Details, SDI.

b. SDI Manual of Construction with Steel Deck, SDI.

c. Deck Damage and Penetrations, SDI.

d. Steel Deck Institute Design Manual.

e. LRFD Design Manual for Composite Beams and Girders with Steel Deck, SDI.

f. Diaphragm Design Manual, SDI.

11. Steel Joist Institute, SJI.

a. Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders, SJI.

b. Structural Design of Steel Joist Roofs to Resist Ponding Loads, Technical Digest No. 3, SJI.

g. Vibration of Steel Joist Concrete Slab Floors, Technical Digest No. 5, SJI.

h. Structural Design of Steel Joist Roofs to Resist Uplift Loads, Technical Digest No. 9, SJI.

i. Welding of Open Web Steel, Technical Digest No. 8, SJI.

j. Handling and Erection of Steel Joists and Joist Girders, Technical Digest No. 9, SJI.

k. 60-Year Steel Joist Manual, SJI.

b. A Guide to the Shop Painting of Structural Steel, SSPC/AISC.

13. Underwriters Laboratories, Inc., UL.

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a. Test for Uplift Resistance of Roof Assemblies, UL 580.

14. Welded Steel Tube Institute, Inc., WSTI.

a. Manual of Cold Formed Welded Structural Steel Tube.

SECTION R4408.2
HIGH-VELOCITY HURRICANE ZONES—MATERIAL

R4408.2.1 Steel. Steel shall conform to the physical requirements set forth in the applicable standard in Section R4408.1.3.

R4408.2.2 High-strength steel bolts. High-strength steel bolts shall conform to the requirements set forth in the applicable standards of Section R4408.1.3.

R4408.2.3 Used and damaged material. All steel shall be straight and true, and any section damaged to be out of shape shall not be used. Steel previously used or fabricated for use or fabricated in error shall not be used except with the approval of the building official. Filled holes or welds shall not be concealed. Straightened or retempered fire-burned steel shall not be used except with the approval of the building official.

R4408.2.4 Tests. The building official may require tests and/or mill records to determine the quality of materials.

R4408.2.5 Ribbed bolts. Ribbed bolts shall be made from carbon manganese steel with a minimum tensile strength of 70,000 psi (482.7 MPa).

SECTION R4408.3
HIGH-VELOCITY HURRICANE ZONES—DESIGN LOADS

R4408.3.1 Design shall be based on the dead, live, wind and other loads set forth in Section R4403 and the additional stress considerations set forth in this section.

SECTION R4408.4
HIGH-VELOCITY HURRICANE ZONES—MINIMUM THICKNESS OF MATERIAL

R4408.4.1 The minimum thickness of material shall not be less than as set forth in the applicable standards listed in Section R4408.1.3 except as otherwise set forth herein.

SECTION R4408.5
HIGH-VELOCITY HURRICANE ZONES—CONNECTIONS

R4408.5.1 Connections shall conform to the requirements of the applicable standards set forth in Section R4408.1.3.

R4408.5.2 A Florida registered architect or licensed engineer shall inspect the welding and high-strength bolting of structural steel framing and welding, bolting and fastening of lightweight material systems and metal sidings of buildings with areas exceeding 1,000 square feet (93 m2).

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R4408.5.3 Welding in the shop or field may be done only by AWS certified welders.

SECTION R4408.6
HIGH-VELOCITY HURRICANE ZONES — TUBULAR COLUMNS

R4408.6.1 Tubular columns and other primary compression members, excluding secondary posts and struts not subject to bending and whose design load does not exceed 2,000 pounds (8900 N), shall have a minimum least dimension of 21/2 inches (64 mm) and a minimum wall thickness of 3/16 inch (4.8 mm).

R4408.6.2 Tubular members when filled with concrete shall have 1/4 inch (6.4 mm) diameter pressure relief holes drilled through the shell, within 6 inches (152 mm) of the top and bottom of the exposed length of the member and one hole at mid-height.

R4408.6.3 Concrete fill in tubular members shall not be assumed to carry any of the load except in compression members having a least dimension of 8 inches (203 mm) or greater and having a 1-inch (25 mm) inspection hole in the plate at each end.

SECTION R4408.8
HIGH-VELOCITY HURRICANE ZONES — OPEN WEB STEEL JOISTS

R4408.8.1 Standards. Open web steel joists shall comply with the standards set forth in Section R4408.1.3.

R4408.8.2 Statements of responsibilities of architects and professional engineers on the design of structural systems using open web steel joists.

R4408.8.2.1 The structural construction documents shall designate the standards for joist design and shall indicate layout, end supports, anchorage, bridging requirements, etc., including connections to walls. The structural construction documents shall indicate special requirements for concentrated loads, openings, extended ends and resistance to uplift.

R4408.8.2.2 The structural engineer of record and/or the architect of record shall require structural submittals for the structural engineer of record's review and/or the architect of record's review as an indication that his or her intent has been understood and that the specified criteria have been used. The structural submittals, unless catalog submittals, shall bear the impressed seal, signature and date of the specialty engineer who prepared them.

R4408.8.2.3 The structural submittals shall identify the specific project, shall list the design criteria and shall show all joist location information and details necessary for proper installation.

R4408.8.3 Design.

R4408.8.3.1 Open web steel joist systems shall be designed to accommodate the loads and forces set forth in Section R4403.

R4408.8.3.2 Net uplift forces for all zones, applied to the joist systems, shall be clearly indicated on the structural construction documents.

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R4408.8.3.3 Where the net uplift force is equal to or greater than the gravity load of construction, all web and bottom chord members shall comply with slenderness ratio requirements for top chord and for compression members other than top chord as provided for in the standards set forth in Section R4408.1.3(11).

R4408.8.3.4 The slenderness ratio about the horizontal axis can be used in determining the capacity of the top chord provided the top chord is stayed laterally by the deck system. The top chord for superimposed dead and live loads shall be considered to be stayed laterally if:

1. A poured in place concrete slab is in direct contact with the top chord.

2. A light gauge steel deck complying with Section R4408.9 is fastened to the top chord.

3. Any other approved deck system such that attachments of the top chord to the deck are capable of resisting a lateral force specified in the standard set forth in Section R4408.1.3 and the spacing of the fasteners does not exceed 24 inches (610 mm) along the chord.

R4408.8.3.5 When the bottom chord under net uplift loads is in compression, the bottom chord shall be stayed laterally by a bracing system adequately anchored at each end.

R4408.8.3.6 Fastenings shall be bolting, welding or other approved fastening device that provides a resistance to lateral movement as required by rational analysis or by test, but not less than 400 pounds per foot (5838 N/m).

R4408.8.4 Connections. The joints and connections of members of steel joists shall be made by welding or bolting.

R4408.8.5 Bridging.

R4408.8.5.1 All bridging and anchors shall be completely installed before application of any construction loads. Bridging shall secure the chords against lateral movement and shall position and hold the joists vertical and in a straight line.

R4408.8.5.2 Bridging members shall be of material having a thickness not less than:

1. 1/8 inch (3.2 mm) for hot rolled sections.

2. 16 gauge for cold-formed sections.

3. 1/2 inch (12.7 mm) diameter for round members.

R4408.8.5.3 Bridging shall be connected to the chords of the joists by welding, bolting or other positive mechanical means. Each attachment shall be capable of resisting a horizontal force specified in the standard set forth in Section R4408.1.3.

R4408.8.5.4 Bridging shall be connected to the chords of the joists by bolting or welding at all points of contact and shall be capable of transmitting the forces required of the bridging members. The ends of all bridging lines shall terminate at walls or beams and shall be anchored thereto and where anchorage is not possible, stability shall be provided by additional bracing.

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R4408.8.5.5 Where uplift forces are a design requirement, a single line of continuous bottom chord bridging shall be provided near the first panel points.

R4408.8.6 End supports and anchorage.

R4408.8.6.1 Joists shall not bear directly on unit masonry unless masonry is designed as engineered unit masonry with properly reinforced, grout-filled continuous bond beam.

R4408.8.6.2 The ends of every joist shall be bolted, welded or encased in concrete at each point of bearing to provide not less resistance in any direction than 50 percent of the Steel Joist Institute rated end reaction horizontally and 100 percent of the net uplift reaction specified in the structural construction documents.

R4408.8.6.3 The ends of joists shall have a minimum bearing, on reinforced concrete and steel supports as specified in the standard set forth in Section R4408.1.3(11).

R4408.8.7 Fabrication. Steel joists shall be manufactured by plants having a certificate of competency issued by the authority having jurisdiction.

SECTION R4408.9
HIGH VELOCITY HURRICANE ZONES — COLD-FORMED STEEL CONSTRUCTION

R4408.9.1 Cold-formed steel construction shall include individual structural members, structural decks or wall panels, and nonstructural roofing, siding and other construction elements formed from sheet or strip steel and as set forth in Section R4408.1.3(2).

R4408.9.2 Standards. Cold-formed steel used in structural applications shall conform to the standards set forth in Section R4408.1.3(2).

R4408.9.2.1 Galvanizing as referred to herein is to be zinc coating conforming to the standard set forth in Section R4408.1.3(5)(d).

R4408.9.3 Individual structural members. Design, fabrication and erection of individual cold-formed steel structural members shall be as set forth herein.

R4408.9.3.1 All structural members shall be positively connected to resist the loads set forth in Section R4403.

R4408.9.3.2 All connections shall be by welding, riveting, bolting or other approved fastening devices or methods providing positive attachment and resistance to loosening. Fasteners shall be of compatible material.

R4408.9.3.3 Cables and rods shall not be used as lateral bracing in habitable structures. Lateral bracing, when used, shall have a slenderness ratio of 300 or less, unless restricted by any other section of this code.

R4408.9.3.4 Doors and windows in pre-engineered metal building systems shall be designed as a structural component member and shall conform to all requirements in this section.

R4408.9.3.5 All doors shall be anchored as part of the frame in the closed position.

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R4408.9.3.6 No increase in strength shall be allowed for the effect of cold work.

R4408.9.4 Structural sheets. Decks and panels with or without an approved fill material may be designed as diaphragms in accordance with Diaphragm Design Manual of the Steel Deck Institute, provided other limitations in this code are complied with.

R4408.9.4.1 Poured fill on roof and floor decks shall not be assumed to have any structural value to support or resist vertical or lateral loads or to provide stability or diaphragm action unless so designed, and poured fill and/or applied materials do not degrade when subjected to moisture.

R4408.9.4.2 Positive attachment of sheets shall be provided to resist uplift forces. Attachment shall be as set forth in Section R4408.9.3.1 and as required by rational analysis, and/or tests, but not less frequently than the following maximum spacing:

1. One fastener shall be placed near the corner of each sheet or at overlapping corners of sheets.

2. Along each supporting member, the spacing of fasteners shall not exceed 8 inches (203 mm) on centers at ends of sheets or 12 inches (305 mm) on centers.

3. The spacing of edge fasteners between panels, and between panels and supporting members, parallel to the direction of span, where continuous interlock is not otherwise provided shall be not more than 12 inches (305 mm) on centers.

4. Fastening shall be by bolting, welding or other approved fastening device that provides a resistance to lateral movement as required by rational analysis or by test, but not less than 400 pounds per lineal foot (5838 N/m).

5. Poured lightweight concrete fill will be acceptable as continuous interlock.

6. Attachment to the supporting structure shall be provided at all perimeters and discontinuities by fasteners spaced at no more than 8 inches (203 mm) on center.

7. Wall panels shall be attached as set forth in Section R4408.9.4.2(1),(2) and (3).

R4408.9.4.3 Metal siding and roof panels shall be not less than 24 gauge.

Exception: Roof panels having an approved fill material designed to act as a diaphragm may use a lighter deck gauge provided that the Product Approval for the fill material allows its use over the same deck gauge, but in no case shall the deck be less than 26 gauge. The permit applicant shall provide the building official with signed and sealed structural calculations for the diaphragm design prepared by a licensed architect or engineer proficient in structural design. The diaphragm design shall comply with the applicable requirements of Section R4403 and Section R4408.

R4408.9.4.4 Deflection of metal siding and roof panels shall not exceed L/240.

R4408.9.4.5 The bending stress of metal siding and roof panels shall be designed using a safety factor of not less than 2.5.

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R4408.9.4.6 Minimum roof decking uplift loads shall comply with the design requirements of Section R4403 utilizing rational analysis, but not less than UL 580 Class 90.

R4408.9.4.7 Reserved.

R4408.9.4.8 Metal siding and roof panels shall be designed, where possible, to be continuous over two or more spans.

R4408.9.5 Nonstructural sheets. Steel sheet sections not suitable by rational analysis for self-supporting structural sheets shall be termed roofing and siding. Roofing and siding shall be used only over solid wood sheathing or equivalent backing.

R4408.9.5.1 Attachment of sheets shall be as set forth in Section R4408.9.4.2

R4408.9.6 Protection of metal. All members shall be treated with protective paint coatings or equivalent protection except as permitted in Sections R4408.9.6.1 or R4408.9.6.2.

R4408.9.6.1 All steel sheets having a thickness of less than 20 gauge, i.e., materials of higher gauge, shall be galvanized in accordance with the standards of Section R4408.1.3(5)(d) herein to provide a minimum coating designation of G90.

R4408.9.6.2 Abrasions or damages to the protective coating shall be spot treated with a material and in a manner compatible to the shop protective coating.

R4408.9.7 Welding shall conform to the requirements of Sections R4408.1.3, R4408.5.2 and R4408.5.3.

SECTION R4408.10
HIGH-VELOCITY HURRICANE ZONES — PREENGINEERED, PREFABRICATED METAL BUILDING SYSTEMS AND COMPONENTS (PREENGINEERED STRUCTURES)

R4408.10.1 Scope. Metal buildings (pre-engineered structures) shall include, but not be limited to, tapered or straight web structural steel frames and predominantly cold formed steel secondary components, including, but not limited to, girts, purlins, roof sheets, wall sheets, etc.

R4408.10.2 Standards. Frames and components shall comply with the standards set forth in Section R4408.1.3.

R4408.10.3 Structural construction documents for pre-engineered structures shall indicate the necessary measures for adapting the structures to the specific site. The structural construction documents shall indicate all openings, concentrated loads and other special requirements. Foundation conditions assumed in the design shall be indicated as well as the location and magnitude of building reactions on that foundation under all design conditions.

R4408.10.5 Design. A building or component system in this section shall have a structural engineer of record and/or architect of record responsible for the overall design and performance of the entire building including the foundation and the anchorage of the pre-engineered metal

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systems buildings thereto. The structural engineer of record and/or the architect of record shall provide the structural construction documents necessary for permitting.

R4408.10.5.1 Calculations for drift and deflection of the metal system building shall be by the specialty engineer.

R4408.10.5.2 Calculations for deflection shall be done using only the bare frame method. Reductions based on engineering judgment using the assumed composite stiffness of the building envelope shall not be allowed. Drift shall follow AISC serviceability design considerations for low rise buildings. The use of composite stiffness for deflection calculations shall be permitted only when actual calculations for the stiffness are included with the design for the specific project. When maximum deflections are specified by the structural construction documents, calculations shall be included in the design data.

R4408.10.5.3 The manufacturer shall design the metal system building and/or component system in accordance with the provisions of Section R4403, and the design shall be signed, dated and sealed by the specialty engineer and reviewed by the structural engineer of record and/or the architect of record. The manufacturer of the metal system building and or component system shall be responsible to provide all reactions to the structural engineer of record and/or the architect of record.

R4408.10.5.4 Fastenings shall be by bolting, welding or other approved fastening device that provides a resistance to lateral movement as required by rational analysis or by test, but not less than 400 pounds per lineal foot (5838 N/m).

R4408.10.7.2 Temporary bracing shall be provided during erection and shall remain in place until all structural frames, purlins, girts, flange braces, cable or rod bracing and sheets used as diaphragms have been installed.

R4408.10.8 Roof sheets, wall sheets, roof panels and wall panels.

R4408.10.8.2 The fusion welding of structural members and structural sheets defined in Section R4408.9.4 and less than 22 gauge (0.0299 inch nominal) in thickness shall have minimum of 5/8 inch (17 mm) diameter welds through weld washers not less than 14 gauge in thickness and 1 inch (25 mm) in diameter, contoured if necessary to provide continuous contact, or an equivalent device.

R4408.10.8.3 Clip-mounted standing-seam roof sheets shall not be used as diaphragms nor shall they be considered as adequate lateral bracing of the flange of the secondary member to which they are attached unless one or both of these features are designed into the sheathing system and the manufacturer can certify by testing and/or analysis that such capabilities exist and are appropriately defined.

R4408.10.8.4 Structural standing-seam roof sheets shall be a minimum of 24 gauge (0.0239 inch nominal) in thickness.

R4408.10.8.5 Direct screw attached roof and wall sheets may be used as diaphragms provided the sheets are a minimum of 24 gauge (0.0239 inch nominal) in thickness. Additionally, these sheets shall be considered to laterally brace the flange of the secondary member to which they are attached.

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R4408.10.8.6 See Section R4408.9 for additional requirements for roof sheets, wall sheets, roof panels and wall panels.

R4408.10.9 Roof purlins and wall girts.

R4408.10.9.1 Adequate bracing shall be provided to the compression flanges of secondary members with special attention to those members subject to uplift or outward pressures where no roof or wall sheets are attached to provide such bracing. Sag rods shall not be considered bracing when located in the neutral axis of the web of the secondary members.

R4408.10.9.2 Roof purlins and wall girts shall be laterally braced in addition to relying on deck and panel diaphragm action.

R4408.10.9.3 The ends and bearing points of secondary members shall be designed to carry 100 percent of dead, live and collateral loads superimposed on them by wind.

R4408.10.9.4 Upward or outward forces of wind are to be calculated without live and collateral loads. When downward or inward forces caused by wind are involved, the dead forces plus collateral load forces must be combined but the roof live load may be omitted.

R4408.10.10 Individual structural members.

R4408.10.10.1 Cables and rods shall not be used as lateral bracing in habitable structures. Lateral bracing, when used, shall have a slenderness ratio of 300 or less, unless restricted by any other section of this code.

R4408.10.10.3 All doors shall be anchored as part of the frame in the closed position.

R4408.10.10.4 No increase in strength shall be allowed for the effect of cold work.

R4408.10.10.5 See Section R4408.9 for additional requirements for preengineered metal building systems and components.

SECTION R4408.11
HIGH-VELOCITY HURRICANE ZONES — CHAIN LINK FENCES

R4408.11.1 Chain link fences in excess of 12 feet (3.7 m) in height shall be designed according to the loads specified in Section R4403.

R4408.11.2 Chain link fences less than 12 feet (3.7 m) in height shall be designed according to the loads specified in Section R4403 or may be constructed to meet the minimum requirements specified in Table R4408.11.

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Date Submitted	7/9/2012	**Section**	4409	**Proponent**	Michael Goolsby
Chapter	44	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Eliminating unnecessary duplication of Chapter 44 HVHZ provisions

Rationale

Since the inception of the FBC, the content of Chapter 44 of the FBC, R has been a duplication of the sections contained in the FBC, Building volume. This proposed modification is intended to maintain the continuation of the current level of safety for the protection of life and property unchanged. Importantly, the proposed modification eliminates the need to unnecessarily duplicate more than one-hundred pages into the FBC, R volume, thereby reducing the size of the text contained in the FBC. Additionally, the proposed modification prevents the need to replace all of the non-wind related sections which were removed by legislative directive with dozens of individual modifications, each requiring review and approval; this process would otherwise be unavoidable in order to create a crucial integration of applicable and relevant building code sections into Chapter 44 requirements. In short, this proposed modification is a simplified approach resulting in identical code requirements but through a less time consuming, less complicated and less duplicative process.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to building and property owners relative to cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

It does so by ensuring direction to applicable sections of the code are provided.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

It does so by eliminating the need to unnecessarily duplicate building code provisions and affects a reduction in the number of code pages to be compiled, reviewed, edited and printed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification does not curtail the use of any material, products, methods or systems of construction already deemed acceptable by the Florida Building Code or any alternate materials, design and methods of construction and equipment acceptable to the code official.

Does not degrade the effectiveness of the code

This modification does not degrade the effectiveness of the code; instead, it maintains the applicability of relevant base code requirements as has been the case since the first edition of the Florida Building Code.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5016-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

Creates a reference to Chapter 23 of the FBC-B. The FBC-R was created to be a free standing document and as such should include the language if it meets the criteria for a Florida specific amendment.

S5016 Text Modification

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SECTION R4409

HIGH-VELOCITY HURRICANE ZONES—WOOD

R4409.1 ~~General~~ Refer to Chapter 23 of the Florida Building Code, Building.

~~**R4409.1.1 Design.** Wood members and their fastenings shall be designed to comply with this code by methods based on rational analysis or approved laboratory testing procedures, both performed in accordance with fundamental principles of theoretical and applied mechanics.~~

~~**R4409.1.2 Workmanship.** Wood members shall be framed, anchored, tied and braced to develop the strength and rigidity necessary for the purposes for which they are used and to resist the loads imposed as set forth in this code. Wood construction shall be in conformance with the tolerances, quality and methods of construction as prescribed by the standards in Chapter 43 of this code.~~

~~**R4409.1.3 Fabrication.**~~

~~**R4409.1.3.1** Preparation, fabrication and installation of wood members and the glues, connectors and mechanical devices for fastening shall conform to good engineering practice.~~

~~**R4409.1.3.2** Any person desiring to manufacture or fabricate wood truss assemblies shall obtain a certificate of competency from the authority having jurisdiction.~~

~~**R4409.1.4** The following standards, as set forth in Chapter 43 of this code, are hereby adopted for the design and quality of wood members and their fastenings:~~

~~**R4409.1.4.1** American Hardboard Products Association~~

~~887 B Wilmette Road, Palatine, IL 60067 AHA~~

~~1. Basic Hardboard ANSI/AHA A135.4 1982~~

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~~2. Prefinished Hardboard Paneling ANSI/AHA A135.5-1982~~

~~3. Hardboard Siding ANSI/AHA A135.6-1990~~

~~4. Cellulosic Fiberboard ANSI/AHA A194.1-1985~~

~~5. Recommended Product and Application Specification - Structural Insulating Roof Deck, I.B. Spec. No. 1~~

~~6. Recommended Product and Application Specification - 1/2 inch Fiberboard Nail-Base Sheathing I.B. Spec. No. 2~~

~~7. Recommended Product and Application Specification - 1/2 inch Intermediate Fiberboard Sheathing I.B. Spec. No. 3~~

R4409.1.4.2 ~~American Institute of Timber Construction~~

~~333 West Hampden Avenue, Englewood, CO80110 AITC~~

~~1. Typical Construction Details AITC 104~~

~~2. Code of Suggested Practices AITC 106~~

~~3. Standard for Heavy Timber Construction AITC 108~~

~~4. Standard for Preservative Treatment for Structural Glued Laminated Timber AITC 109~~

~~5. Standard Appearance Grades for Structural Glued Laminated Timber AITC 110~~

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~~6. Standard for Tongue and Groove Heavy Timber Roof Decking AITC 112~~

~~7. Standard for Dimensions of Glued Laminated Structural Members AITC 113~~

~~8. Standard Specifications for Structural Glued Laminated Timber of Softwood Species AITC 117~~

~~9. Standard Specifications for Hardwood Glued Laminated Timber AITC 119~~

~~10. Technical Report No. 7, Calculation of Fire Resistance of Glued Laminated Timber~~

~~11. Structural Glued Laminated Timber ANSI/AITC A190.1~~

~~**TABLE R4408.11**~~

~~**CHAIN LINK FENCE MINIMUM REQUIREMENTS**~~

~~Fence Height (ft)~~	~~Terminal Post Dimensions (in inches) (o.d. × wall thickness)~~	~~Line Post Dimensions (in inches) (o.d. × wall thickness)~~	~~Terminal Post Concrete Foundation Size (diameter × depth) (in inches)~~	~~Line Post Concrete Foundation Size (diameter × depth) (in inches)~~
~~Up to 4~~	~~23/8 × 0.042~~	~~15/8 × 0.047~~	~~10 × 24~~	~~8 × 24~~
~~Over 4 to 5~~	~~23/8 × 0.042~~	~~17/8 × 0.055~~	~~10 × 24~~	~~8 × 24~~
~~Over 5 to 6~~	~~23/8 × 0.042~~	~~17/8 × 0.065~~	~~10 × 24~~	~~8 × 24~~
~~Over 6 to 8~~	~~23/8 × 0.110~~	~~23/8 × 0.095~~	~~10 × 36~~	~~10 × 36~~

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Over 8 to 10	27/8 × 0.110	23/8 × 0.130	12 × 40	10 × 40
Over 10 to 12	27/8 × 0.160	27/8 × 0.120	12 × 42	12 × 42

For SI: 1 inch = 25.4 mm.

Notes:

1. This Table is applicable only to fences with unrestricted airflow.

2. Fabric: 121/2 gauge minimum.

3. Tension Bands: Use one less than the height of the fence in feet evenly spaced.

4. Fabric Ties: Must be minimum the same gauge of the fabric.

5. Fabric Tie Spacing on the Top Rail: Five ties between posts, evenly spaced.

6. Fabric Tie Spacing on Line Posts: One less than height of the fence in feet, evenly spaced.

7. Either top rail or top tension wire shall be used.

8. Braces must be used at Terminal Posts if top tension wire is used instead of Top Rail.

9. Post Spacing: 10 foot (3 m) on center maximum.

10. Posts shall be embedded to within 6 inch (152 mm) from the bottom of the foundation.

11. In order to follow the contour of the land, the bottom of the fence may clear the contour of the ground by up to 5 inch (127 mm) without increasing table values to the next higher limit.

R4409.1.4.3 APA The Engineered Wood Association (Formerly APA American Plywood Association) P.O. Box 11700, Tacoma, WA 98411

1. APA Design Construction Guide, Residential and Commercial E30D

2. Plywood Design Specification Y510J

3. Plywood Design Specification Design and Fabrication of Plywood Beams Supplement No. 1 S811

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~~4. Plywood Design Specification Design and Fabrication of Plywood Beams Supplement No. 2 S812~~

~~5. Plywood Design Specification Design and Fabrication of Plywood Stressed Skin Panels Supplement No. 3 U813~~

~~6. Plywood Design Specifications Design and Fabrication of Plywood Sandwich Panels Supplement No. 4 U814~~

~~7. Plywood Design Specifications Design and Fabrication of All Plywood Beams. Supplement No. 5 H815~~

~~8. Plywood Folded Plate, Laboratory Report 21 V910~~

~~9. APA Design/Construction Guide Diaphragms L350~~

~~10. Performance Standards and Policies for Structural Use Panels PRP 108~~

~~11. 303 Siding Manufacturing Specifications B840~~

R4409.1.4.4 ~~American Society for Testing Materials~~

~~1916 Race Street, Philadelphia, PA 19103 1187 ASTM~~

~~1. Standard Test Methods for Mechanical Fasteners in Wood D 1761~~

~~2. Accelerated Weathering on Fire Retardant Treated Wood for Fire Testing D 2898~~

~~3. Surface Burning Characteristics of Building Materials E 84~~

~~4. Hygroscopic Properties of Fire Retardant Wood and Wood Base Products D 3201~~

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~~5. Standard Specifications for Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems D 3498~~

R4409.1.4.5 ~~American Wood Preservers Association~~

~~P.O. Box 361784, Birmingham, AL 35236-1784~~

~~1. AWPA Use Category Systems Standard U1~~

~~2. AWPA Standard M4 Care of Pressure Treated Wood Products~~

R4409.1.4.6 ~~National Institute for Standards and Technology Standard Development Services Section, Standards Application and Analysis Division, Washington, D.C. 20234 NIST~~

~~1. Mat-Formed Particleboard CS236~~

~~2. Structural Glued Laminated Timber PS56~~

~~3. Construction and Industrial Plywood PS1~~

~~4. American Softwood Lumber Standard PS20~~

~~5. Performance Standard for Wood-Based Structural-Use Panels PS2*~~

~~*All wood-based structural panels except plywood shall have Product Approval and shall be tested in accordance with High-Velocity Hurricane Zone testing protocols.~~

R4409.1.4.7 ~~American Forest and Paper Association 1111 19 Street NW, Washington, D.C. 20036~~

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~~1. ANSI/AF&PA National Design Specification for Wood Construction, 2001~~ 2005

~~2. ANSI/AF&PA Design Values for Wood Construction, 2001~~ 2005

~~3. Wood Structural Design Data, 1992~~

~~4. Span Tables for Joists and Rafters, 2005~~

~~5. Design Values for Joists and Rafters, 2005~~

~~6. Wood Construction Data No. 1, Details for Conventional Wood Frame Construction, 2001~~

~~7. Wood Construction Data No. 4, Plank and Beam Framing for Residential Building, 2003~~

~~8. Wood Construction Data No. 5, Heavy Timber Construction Details,~~ 2004

~~9. Wood Construction Data No. 6, Design of Wood Frame Structures for Permanence, 2006~~

~~10. ANSI/AF&PA PWF 2007 Permanent Wood Foundation (PWF) Design Specification, 2007~~

~~11. ANSI/AF&PA WFCM 2001, Wood Frame Construction Manual for one and Two Family Dwellings, 2001~~

~~R4409.1.4.8~~ ~~Timber Company, Inc.~~

~~2402 Daniels Street, Madison, WI 53704 TECO~~

~~Performance Standards and Policies for Structural use Panels. PRP 133~~

~~R4409.1.4.9~~ ~~Truss Plate Institute~~

~~218 N. Lee Street, Suite 312, Alexandria, VA 22314~~

~~1. National Design Standard for Metal Plate Connected Wood Truss Construction (Excluding Chapter 2).~~

~~2. Building Component Safety Information (BCSI 1-03) Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses [A joint publication with the Wood Truss Council of America (WTCA)].~~

~~SECTION R4409.2~~

~~HIGH-VELOCITY HURRICANE ZONES—QUALITY~~

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~~**R4409.2.1 Identification.** All lumber used structurally, including end-jointed lumber, shall be identified by the grade mark of a lumber grading or inspection bureau or agency approved by the Board of Review of the American Lumber Standards Committee or the Canadian Lumber Standards Administrative Board; except that precut material, rough-sawn lumber and lumber thicker than 2 inches (51 mm) may be covered by a certificate of inspection in lieu of grade marking. The glued joints in end-jointed lumber, when used for load-supporting purposes, shall be certified to be in accordance with the appropriate grading rules.~~

~~**R4409.2.1.1** Structural glued laminated timber shall be manufactured and identified as required in ANSI/AITC 190.1 as adopted in Section R4409.1.4.~~

~~**R4409.2.1.2** All wood-based structural panels used structurally, including siding, roof sheathing, wall sheathing, floor sheathing, diaphragms and built-up members, shall be identified for grade and exposure level by the grade stamp of an approved testing and grading agency indicating conformance with PS 1, PS 2, APA PRP 108 or TECO PRP 133 as adopted in Section R4409.1.4.~~

~~**R4409.2.1.3** Wood shingles and/or shakes shall be identified by the grade mark of an approved grading or inspection bureau or agency.~~

~~**R4409.2.1.4** Fiberboard for its various uses shall conform to ANSI/AHA A 194.1.~~

~~**R4409.2.1.5** Hardboard shall conform to AHA standards as adopted in Section R4409.1.4, and shall be identified as to classification.~~

~~**R4409.2.1.6** Particleboard shall conform to the mat-formed particleboard standard, NIST CS236, as adopted in Section R4409.1.4.6, and shall be identified by the grade mark or certificate of inspection issued by an approved agency.~~

~~**R4409.2.1.8** All lumber, sawn timber, wood-based structural panels and poles supporting permanent structures and required by this code to be pressure treated and as described in the AWPA standards shall bear the quality mark of an approved inspection agency which maintains continued supervision, testing and inspection over the product. Agencies shall be accredited in accordance with the procedures of the American Lumber Standard (PS 20) or approved equivalent.~~

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R4409.2.1.9 Pressure-treated poles shall be treated in accordance with AWPA U1 for sawn timber posts (Commodity Specification A, Use Category 4B) and for round timber posts (Commodity Specification B, Use Category 4B).

R4409.2.1.10 The quality mark shall contain, as a minimum, the following information:

1. The treating company and plant location

2. The AWPA standard to which the product is treated

3. The trademark of an approved inspection agency which maintains continued supervision, testing and inspection over the quality of the product as described in the AWPA standards

4. The preservative used

5. The amount of retention of the chemical per cubic foot of wood

6. If applicable, the method of drying after treatment

7. The purpose for which the wood has been treated: ground contact, above ground or foundation

Exception: When the size of individual pieces, e.g. lumber less than 1 inch (25 mm) in nominal thickness, or lumber less than nominal 1x5 or 2x4, or lumber 36 inches (914 mm) and shorter, except that 5/4x4 shall be quality marked, prevents application of full legible marks, the quality mark shall be applied by stamping the faces of exterior pieces or by end labeling not less than 25 percent of the pieces of a bundled unit.

R4409.2.1.11 All wood-based structural panels, including those made of fiberboard, hardboard and particleboard shall have Product Approval. Product Approval shall be given upon certification by an approved independent testing laboratory that the product:

1. Complies with the applicable standards set forth above

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2. The product complies with the manufacturer's published design properties before and after a wet-dry cycle

3. The product when tested dry maintains a safety factor of 2:1 and when tested after the cycles specified in Section R4409.2.1.11(2) above maintains a safety factor of 1.5:1. Testing shall be as specified in the testing protocol.

R4409.2.2 Wood-based structural panels permanently exposed in outdoor locations shall be rated for exterior use. When used for roof sheathing exposed to the outdoors on the underside or used structurally for wall, floor or roof cladding or for diaphragms, the panels shall be rated for Exposure 1 or exterior use.

R4409.2.3 All lumber 2 inches (51 mm) or less in thickness shall contain not more than 19 percent moisture at the time of permanent incorporation in a building or structure and/or at the time of treatment with a wood preservative.

R4409.2.4 Grade and species.

R4409.2.4.1 All structural wood members not limited by other sections of this section shall be of sufficient size and capacity to carry all loads as required by Section R4403 without exceeding the allowable design stresses specified in the National Design Specification for Wood Construction and in compliance with Section R4409.4.

R4409.2.4.2 Lumber boards used for floor and roof sheathing shall be in accordance with Table R4409.2.4.2.

TABLE R4409.2.4.2

MINIMUM GRADE REQUIREMENTS: BOARD GRADES

FLOOR OR ROOF SHEATHING	GRADING RULES
Utility	NLGA, WCLIB or WWPA
No. 4 Common or Utility	NLGA, WCLIB, WWPA, NHPMA or NELMA
No. 3	SPIB

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~~**SECTION R4409.3**~~

~~**Reserved**~~

~~**SECTION R4409.4**~~

~~**HIGH-VELOCITY HURRICANE ZONES**~~

~~**UNIT STRESSES**~~

~~**R4409.4.1 General.**~~

~~**R4409.4.1.1** Lumber used for joists, rafters, trusses, columns, beams and/or other structural members shall be of no less strength than No. 2 grade of Southern Pine, Douglas Fir-Larch, Hem-Fir or Spruce-Pine-Fir. Joists and rafters shall be sized according to AF&PA Span Tables for Joists and Rafters adopted in Section R4409.1.4.~~

~~**R4409.4.1.2** Lumber used for studs in exterior walls and interior bearing walls shall be of no less strength than Stud Grade of Southern Pine, Douglas Fir-Larch, Hem-Fir or Spruce-Pine-Fir and capable of resisting all loads determined in accordance with Section R4403. The unbraced height of the wall shall be no more than 8 feet 6 inches (2.6 m) (including top and bottom plates). Heights may be increased where justified by rational analysis prepared by a registered professional engineer or registered architect proficient in structural design.~~

~~**R4409.4.1.4** The designer shall specify on the design drawings the size, spacing, species and grade of all load supporting members.~~

~~**R4409.4.2** Allowable stress design value may be modified for repetitive, duration, etc., factors where design is by a registered professional engineer or registered architect proficient in structural design or where such modified values are reflected in the tables of the standards in Section R4409.1.4.~~

~~**SECTION R4409.5**~~

~~**HIGH-VELOCITY HURRICANE ZONES**~~

~~**VERTICAL FRAMING**~~

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R4409.5.1 Studs in bearing and exterior walls. Studs in walls framing over 8 feet 6 inches (2.6 m) (including top and bottom plates) or supporting floor and roof loads shall be designed by rational analysis prepared by a registered professional engineer or registered architect proficient in structural design.

R4409.5.1.1 Minimum size. Studs shall be not less than 2x6 for exterior walls or 2x4 for interior bearing or load resisting walls unless designed by rational analysis by a registered licensed engineer or registered architect proficient in structural design.

R4409.5.1.2 Spacing. Studs shall be spaced not more than 16 inches (406 mm) on center unless designed by rational analysis as a system of columns and beams by a registered licensed engineer or registered architect proficient in structural design.

R4409.5.1.3 Placing.

R4409.5.1.3.1 Studs in exterior and bearing walls shall be placed with the longer dimension perpendicular to the wall.

R4409.5.1.3.2 Studs in exterior walls and in bearing walls shall be supported by foundation plates, sills, or girders or floor framing directly over supporting walls or girders. Stud bearing walls when perpendicular to supporting joists may be offset from supporting walls or girders not more than the depth of the joists unless such joists are designed for the extra loading conditions.

R4409.5.1.3.3 Stud walls framing into base plates of exterior walls and interior bearing walls resting on masonry or concrete shall be anchored past the plate to the masonry or concrete, or shall be anchored to a sill plate which is anchored in accordance with Section R4409.5.1.4.1 when the net wind uplift is up to 300 pounds per foot (4378 N/m).

R4409.5.1.4 Sills and/or base plates.

R4409.5.1.4.1 Sills and/or base plates, where provided in contact with masonry or concrete, shall be of an approved durable species or be treated with an approved preservative and shall be attached to the masonry or concrete with 1/2 inch (13 mm) diameter bolts with oversized washer spaced not over 2 feet (610 mm) apart and embedded not less than 7 inches (178 mm) into a grout filled cell of masonry or into concrete. Base plates shall be placed in a recess 3/4 inch (19 mm) deep and the width of the base plate at the edge of a concrete slab, beam/slab or any other type of construction which uses a masonry surface or concrete slab, or be provided with an alternate waterstop method as

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approved by the building official. Alternate methods of anchorage may be designed by rational analysis by a registered professional engineer or a registered architect proficient in structural design.

R4409.5.1.4.2 Where the base plate of a bearing wall is supported on joists or trusses running perpendicular to the wall and the studs from the wall above do not fall directly over a joist or truss, a double base plate or a single base plate supported by a minimum 2x4 inset ribbon shall be used to support the upper stud wall.

R4409.5.1.5 Top plates.

R4409.5.1.5.1 The top plate of stud bearing walls shall be doubled and lapped at each intersection of walls and partitions.

R4409.5.1.5.2 Joints shall be lapped not less than 4 feet (1219 mm).

R4409.5.1.6 Corners. Corners of stud walls and partitions shall be framed solid by not less than three studs.

R4409.5.1.7 Splicing. Studs, other than end-jointed lumber, shall be spliced only at points where lateral support is provided.

R4409.5.1.8 Framing types.

R4409.5.1.8.1 Wood framing may be any one, or a combination of, the following types: Platform, balloon, plank and beam or pole type.

R4409.5.1.8.2 Exterior stud walls of two-story buildings shall be balloon-framed with studs continuous from foundation to second floor ceiling and with second floor joists supported as indicated in Section R4409.6.3.3. Gable end walls in wood-frame buildings shall be balloon-framed with studs continuous from foundation to roof.

Exception: Platform framing is allowed in buildings over one story in height provided an additional mandatory inspection for floor level connectors is made before the framing/firestopping inspection. Gable end walls shall be balloon-framed with studs continuous from top floor to roof.

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~~**R4409.5.1.9 Notching.**~~

~~**R4409.5.1.9.1** Studs that carry loads in excess of 75 percent of their capacity shall not be notched or cut.~~

~~**R4409.5.1.9.2** Studs that carry loads 75 percent or less of their capacity may be notched to one-third of the depth without limit of the number of consecutive studs.~~

~~**R4409.5.1.10 Pipes in walls.**~~

~~**R4409.5.1.10.1** Stud walls and partitions containing pipes shall be framed to give proper clearance for the piping.~~

~~**R4409.5.1.10.2** Where walls and partitions containing piping are parallel to floor joists, the joists shall be doubled and may be spaced to allow vertical passage of pipes.~~

~~**R4409.5.1.10.3** Where vertical pipe positions necessitate the cutting of plates, a metal tie not less than 1 inch by 1/8 inch (25 mm by 3 mm) shall be placed on each side of the plate across the opening and nailed with not less than two 16d or three 8d nails at each end.~~

~~**R4409.5.1.11 Headers.**~~

~~**R4409.5.11.1** All headers in bearing walls shall be designed by rational analysis.~~

~~**R4409.5.1.11.2** Headers or lintels over stud wall openings shall have not less than nominal 2 inch (51 mm) bearings.~~

~~**R4409.5.1.12** Studs joining masonry or reinforced concrete walls. Where stud walls or partitions join masonry or concrete walls, such studs shall be secured against lateral movement by bolting to the masonry or concrete with 1/2 inch (13 mm) diameter anchor bolts with oversized washer spaced not more than 4 feet (1219 mm) apart and embedded not less than 5 inches (127 mm) into a grout filled cell or into concrete or as designed by a registered licensed engineer or registered architect proficient in structural design using rational analysis.~~

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~~**R4409.5.1.13 Wind bracing**. Exterior stud walls shall be effectively wind-braced in accordance with Section R4409.9.3. Such bracing shall be designed by a registered licensed engineer or registered architect proficient in structural design.~~

~~**R4409.5.1.14** The intermixing of wall framing described in this section with other types of structural wall systems as provided in this code shall not be permitted unless such wall framing and connections are designed by a registered professional engineer or registered architect proficient in structural design.~~

~~**R4409.5.3 Columns and posts.**~~

~~**R4409.5.3.1** Columns and posts shall be framed to true end bearing, shall be securely anchored against lateral and vertical forces, and shall be designed by a registered professional engineer or registered architect proficient in structural design.~~

~~**R4409.5.3.2** The bottom of columns and posts shall be protected against deterioration by an approved product or method.~~

~~**R4409.5.3.3** Columns and posts shall be spliced only in regions where lateral support is adequately provided about both axes and is designed by rational analysis. Such design shall be prepared, signed and sealed by a registered professional engineer or registered architect proficient in structural design.~~

~~**R4409.5.3.4** Design dimensions of columns and posts shall not be reduced by notching, cutting or boring.~~

~~**SECTION R4409.6**~~

~~**HIGH-VELOCITY HURRICANE ZONES — HORIZONTAL FRAMING**~~

~~**R4409.6.1 Size.**~~

~~**R4409.6.1.1** The minimum size of joists and rafters shall be as set forth in Section R4409.4.~~

~~**R4409.6.1.2** The design of horizontal framing other than joists and rafters shall be as set forth in Section R4409.4.1.1.~~

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~~**R4409.6.3 Bearing.**~~

~~**R4409.6.3.1** Joists and rafters shall have not less than three inches of bearing, on wood, metal, grout filled masonry or concrete except as provided in Sections R4409.6.3.2, R4409.6.3.3 and R4409.6.3.4.~~

~~**R4409.6.3.2 Masonry and concrete.**~~

~~**R4409.6.3.2.1** Joists and rafters may bear on and be anchored by steel strap anchor embedded into a grout filled cell of the masonry or reinforced concrete, as described in Section R4409.8.5.1, to a wood plate provided such wood plate is of an approved durable species or pressure treated with an approved preservative and such plate shall be not less than 2x4 and attached as per Section R4409.5.1.4.1. The net uplift on the plate shall be limited to 300 pounds per foot (4378 N/m).~~

~~**R4409.6.3.2.2** Joists and rafters may bear on a product control approved channel shaped metal saddle and fastened to the masonry by a steel strap anchor embedded into a grout filled cell of the masonry or concrete.~~

~~**R4409.6.3.2.3** Joists and rafters may bear on masonry, provided that each joist or rafter in contact with masonry is of an approved durable species or pressure treated with an approved preservative and anchored as in Section R4409.6.3.2.2 above.~~

~~**R4409.6.3.3** Floor joists may butt into a header beam if effectively toenailed and if an approved metal hanger providing not less than 3 inches (76 mm) of bearing transmits the vertical load to the top of the header, provided, however, that approved devices or other approved means of support may be used in lieu of such bearing. All hangers and devices shall have Product Approval.~~

~~**R4409.6.3.4** Ceiling joists may butt into a header beam, as set forth for floor joists, or approved devices or other approved means of support may be used in lieu of such bearing. All devices shall have Product Approval.~~

~~**R4409.6.3.5** In lieu of the above, bearing and anchorage may be designed by rational analysis by a registered professional engineer or registered architect proficient in structural design.~~

~~**R4409.6.4 Splicing.** Horizontal members shall not be spliced between supports except that properly designed splices or approved end jointed lumber may be used.~~

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~~**R4409.6.5 Notching and boring.**~~

~~**R4409.6.5.1** Unless local unit stresses are calculated on the basis of reduced size, wood members in bending shall not be cut, notched or bored except as provided in Sections R4409.6.5.1.1 and R4409.6.5.1.2.~~

~~**R4409.6.5.1.1** Notches may be cut in the top or bottom not deeper than one-sixth of the depth not longer than one-third of the depth of the member and shall not be located in the middle one-third of the span. Where members are notched at the ends, over bearing points, the notch depth shall not exceed one-fourth the member depth.~~

~~**R4409.6.5.1.2** Holes may be bored in the middle one-third of the depth and length and not larger than one-sixth of the depth. Space between any two holes in the same joist shall be not less than the depth of the joist.~~

~~**R4409.6.5.2** Where necessary to run service pipes in the space between the ceiling and floor larger than can be accommodated by the above provision, such ceilings shall be furred or provision made for headers or beams and/or for changing direction of the joists where the design permits.~~

~~**R4409.6.6 Openings.**~~

~~**R4409.6.6.1** Joists shall be doubled adjacent to openings where more than one joist is cut out or shall be so increased in size or number as may be needed to meet the stress requirements.~~

~~**R4409.6.6.2** Headers shall be of the same size as the joists and where supporting more than one joist shall be double members.~~

~~**R4409.6.6.3** Headers shall be supported by approved metal hangers or ledgers or other approved members.~~

~~**R4409.6.7 Wood entering masonry or reinforced concrete.**~~

~~**R4409.6.7.1** Wood joists, beams or girders which frame into masonry or reinforced concrete shall have a minimum of 1/2 inch (13 mm) air space at the top, end and sides or shall be preservative pressure treated or of an approved durable species.~~

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R4409.6.7.2 Where masonry extends above such wood members, joists shall be fire-cut so the top edge does not enter the masonry more than 1 inch (25 mm) or shall be provided with wall plate boxes of self releasing type or approved hangers.

R4409.6.9 Ceiling joists.

R4409.6.9.1 In buildings with pitched roofs the ceiling joists, where practicable, shall be nailed to the rafters and shall be designed to carry all imposed loads including but not limited to lateral thrust.

R4409.6.9.2 Ceiling joists spanning more than 10 feet (3 m) shall be laterally supported at mid-span.

R4409.6.9.3 Ceiling joists shall not be used to support rafter loads unless the joists and connections are properly designed for the total load being imposed.

R4409.6.10 Roof framing. The permit documents shall include roof framing plans showing spacing and spans of all roof members indicating any fabricated elements to be designed and furnished by others and shall include the details for support and bearing of the roof structural system, for the permanent cross/lateral/diagonal bracing and anchorage required to resist dead, live and wind loads as set forth in Section R4403.9. The framing plans shall also indicate the uplift forces applied on the roof, sheathing type, thickness and nailing requirements for the sheathing. The roof framing plans shall be prepared by and bear the sign and seal of, a registered professional engineer or registered architect of record proficient in structural design.

R4409.6.11 Roof joists. Roof joists may cantilever over exterior walls as limited by the allowable stress, but the length of such cantilever shall not exceed half the length of the portion of the joist inside the building; and where the cantilever of tail joists exceeds 3 feet (914 mm), the roof joist acting as a header shall be doubled.

R4409.6.12 Roof rafters.

R4409.6.12.1 Hip rafters, valley rafters and ridge boards shall be provided and shall be not less in size than the largest rafter framing thereto nor less than required to support the loads.

R4409.6.12.2 Collar ties.

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~~**R4409.6.12.2.1** Collar ties and their connections shall be provided to resist the thrust of rafters and shall be designed by a registered engineer or registered architect proficient in structural design.~~

~~**R4409.6.12.2.2** Collar ties shall not be required if the ridge is designed as a supporting beam. Such design shall be done by a registered licensed engineer or registered architect proficient in structural design.~~

~~**R4409.6.12.2.3** Ceiling joists may serve as collar ties when properly designed by a registered professional engineer or registered architect proficient in structural design.~~

~~**R4409.6.12.3** The actual roof and ceiling dead loads may be used to resist uplift loads, but the maximum combined dead load used to resist uplift loads shall not exceed 10) pounds per square foot (479 Pa).~~

~~**R4409.6.13 Heavy timber construction.** Heavy timber construction of floors or roofs shall comply with the standards in Section R4409.1.4. All heavy timber construction shall be designed by a registered professional engineer or registered architect proficient in structural design to withstand the loads required in Section R4403.~~

~~**R4409.6.14 Vertically laminated beams.** Vertically laminated built-up beams shall be designed and made up of members continuous from bearing to bearing.~~

~~**R4409.6.15 Glued laminated members.** Glued laminated members shall be designed to comply with applicable AITC standards adopted by this code.~~

~~R4409.6.16 Stair stringers.~~

~~R4409.6.16.1 Stair stringers shall, where practicable, be framed to provide 4 inches (102 mm) of bearing at the ends.~~

~~R4409.6.17 Wood trusses.~~

~~**R4409.6.17.1 Trussed rafters.** Trussed rafters shall be designed by methods admitting of rational analysis by a registered professional engineer or registered architect proficient in structural design based on the standards set forth in Section R4409.1.4.~~

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~~**R4409.6.17.1.1** Where steel is used for connecting wood members, such connectors shall be not less than 20 U.S. gauge and shall be protected with a zinc coating conforming to the ASTM A361 Standard set forth in Chapter 43 of this code. Connectors shall have Product Approval or shall be designed by methods admitting of rational analysis by a registered professional engineer or registered architect proficient in structural design.~~

~~**R4409.6.17.1.2** Where a ceiling is to be attached directly to the underside of trusses, the trusses shall be laterally braced with continuous 1x4 members nailed with 8d common nails to the upper side of the bottom chord at panel points but not to exceed 10 feet (3 m) apart. This lateral bracing shall be restrained at each end and at 20 foot (6 m) intervals. Drywall may be considered a rigid ceiling in enclosed areas where it is protected from the elements. The drywall ceiling is not to be considered a ceiling diaphragm.~~

~~**R4409.6.17.1.3** Where a ceiling is to be attached to wood stripping which is nailed to the underside of the bottom chord of trusses with two 8d common nails at each intersection, stripping shall be not less than 1x3 spaced not more than 24 inches (610 mm) apart. Wood stripping may be replaced by furring channels. Furring channels shall be a minimum of 7/8 inch (22 mm) hat shaped channels weighing 287 pounds per 1000 lineal foot (41.4 kg per 100 m) with minimum based steel of 0.0179 inch (0.445 mm) and complying with ASTM C 645 attached to trusses with minimum two #6 11/4 inch (32 mm) screws per intersection. Said stripping or metal furring channels may serve also as the lateral bracing of the truss bottom chord so as to minimize the effects of buckling of the bottom chord when subjected to compressive stresses under reverse load conditions. In addition, the rigid ceiling that is created by this 1x3 stripping or metal furring channels must also be restrained from lateral movements, in accordance with the details provided by the architect or licensed engineer of record.~~

~~**Exception:** Where fire rated design assembly does not allow for this specific installation, see Section R4409.6.17.1.2~~

~~**R4409.6.17.1.4** Where a ceiling is attached to wood members suspended beneath trusses, the provisions of Section R4409.6.1 shall apply.~~

~~**R4409.6.17.2 Prefabricated wood trusses.** Prefabricated wood trusses shall comply with this section.~~

~~**R4409.6.17.2.1 Design.**~~

~~**R4409.6.17.2.1.1** Prefabricated wood trusses shall be designed by a registered professional engineer (delegated engineer) and fabricated in accordance with the National Design Standard for Metal Plate Connected Wood Truss Construction of the Truss Plate Institute (TPI). The truss system designer (delegated engineer) shall prepare the truss system shop drawings. Such shop drawings shall be submitted to the building official for review and approval. The shop drawings shall meet the following requirements:~~

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~~1. All shop drawings shall be in conformity with the architect or engineer of record framing plans unless prior written approval is obtained from the architect or engineer of record. If reframing is approved, the architect or engineer of record shall resubmit revised framing plans to the building official after receiving updated plans from the delegated engineer showing all adjustments necessary to safely transmit all applied loads to the foundation.~~

~~2. Permanent bracing of individual truss members may be required on certain members of the trusses to prevent the members from buckling in the plane normal to the trusses (buckling in the narrow direction). This bracing shall be designed for both upward and downward loads and shall be shown on the individual truss drawings [truss engineering usually shown on 81/2 inches by 11 inch (216 mm by 279 mm) sheets ("A" size drawings)]. The design of this bracing shall be the responsibility of the delegated engineer. The contractor shall be responsible for seeing that this bracing is properly installed. This bracing may be in the form of (but not limited) to "T" bracing of an individual member, or lateral bracing of a series of members common to a number of trusses. Where lateral bracing is used, this bracing shall be restrained against lateral movement, in accordance with details provided by the delegated engineer or by the architect or professional engineer of record. All details and sections required to show the size and connections of all secondary members will be supplied on the delegated engineering plans and shall show all framing, connections and bracing on one or more primary plans of minimum size 24 inches by 36 inches (610mm by 914 mm).~~

~~3. A size 81/2 inches by 11 inches (216 mm by 279 mm) cut sheets showing individual member design shall also be furnished to the architect or engineer of record so that all gravity and uplift loads shown on these cut sheets can be transferred to the primary plans.~~

~~4. The size and location of all plates at each joint shall be shown on the truss design drawings.~~

~~5. The connection between trusses shall be detailed in the shop drawings. Hip sets shall be detailed in a manner to indicate all connections according to engineering drawings for the attachment of skewed members.~~

~~6. Truss design drawings shall indicate the support and minimum bearing of the roof structural system, the permanent cross/lateral bracing, bracing to transfer member buckling forces to the structure and all bracing and anchorage required to resist uplift and lateral forces.~~

~~7. Flat and floor trusses must be clearly marked so that they will be installed right side up. These marks must remain after the flooring, sheathing and insulation have been installed.~~

~~The intent of the above requirements is to provide all information on framing, connections and bracing on one composite set of plans approved by the architect or engineer of record to aid in the review, approval and field inspections for the portion of the property.~~

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R4409.6.17.2.1.2 Trusses shall be designed for wind loads per Section R4403, uniformly distributed live, dead and concentrated loads, and such loads shall be indicated on the roof framing plans and the truss design drawings. Where a girder or truss is subjected to concentrated loads or any unusual loading condition, such conditions must be clearly indicated on the roof framing plans and on the truss design drawings. Where truss members have been cut, shifted or altered in any manner to meet construction needs or for any other reason, additional drawings and additional calculations must be prepared, signed and sealed by the truss designer (a Florida delegated engineer). Such additional drawings and calculations must be approved by the engineer or architect of record and must be submitted to the building official for review and approval.

R4409.6.17.2.1.3 Roof trusses shall be designed for a minimum live load of 30 psf (1436 Pa), a minimum dead load of 15 psf (718 Pa) on the top chord, and a minimum dead load of 10 psf (479 Pa) on the bottom chord; and wind loads per Section R4409 of this code. Where the roof design is such that water is not directed to the interior of the roof and there are no parapets or other roof edge drainage obstructions, roof trusses with slopes of 11/2:12 or greater may be designed for a live load of 20 psf (958 Pa) and a minimum total load of 45 psf (2155 Pa). Adjustment of the allowable design stress for load duration shall be in accordance with National Design Specification for Wood Construction except that load duration factor for wind loads shall not exceed 1.33.

R4409.6.17.2.1.4 The allowable deflection under live load for trusses shall not exceed span/360 for plastered ceilings, span/240 for unplastered finished ceilings, or span/180 for trusses without a ceiling.

R4409.6.17.2.1.5 Flat roof trusses shall be designed for not less than the loads set forth in Section R4409.6.17.2.1.3 above, except that the dead load on the top chord may be taken as 10 psf (479 Pa) in lieu of 15 psf (718 Pa), and the total load reduced to 50 psf (2394 Pa). Adjustment of the allowable design stress for load duration shall be in accordance with National Design Specification for Wood Construction except that load duration factor for wind loads shall not exceed 1.33.

R4409.6.17.2.1.6 Where gable end trusses are permitted in this code, they shall be designed for a minimum live load of 30 psf (1436 Pa) and a minimum dead load of 15 psf (718 Pa) on the top chord. The minimum load of 10 psf (479 Pa) on the bottom chord may be omitted where continuous support is provided. In addition, the gable end trusses shall be designed to sustain wind load as specified in Section R4403 but not less than 30 psf (1436 Pa) perpendicular to the plane of the truss. Such trusses shall use a rationally designed system to resist lateral wind loads and be anchored to the substructure at intervals no greater than 4 feet (1219 mm) on center to resist the uplift forces and shall be designed to transfer the loads to the substructure. The design of the system used to resist the lateral loads imposed on the truss shall be prepared by the engineer or architect of record.

R4409.6.17.2.1.7 When girders exceed two members and when girder reactions exceed the capacity of standard connectors or hangers, these reactions shall be shown on the drawings and the connection must be designed, signed and sealed by a registered professional engineer or registered architect proficient in structural design and such design shall be included as part of the shop drawings.

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~~**R4409.6.17.2.1.8** All trusses shall be properly braced to act as a system. Such bracing shall be included as part of the design document.~~

~~**R4409.6.17.2.2 Materials and specifications.**~~

~~**R4409.6.17.2.2.1** Trusses shall be fabricated applying the design values listed in the standard Design Values for Wood Construction of the American Forest and Paper Association.~~

~~**R4409.6.17.2.2.2** Top and bottom chords shall be of No. 2 grade or better. Web members shall be of No. 3 grade or better. A chord member is defined as the entire top or bottom truss member which may consist of shorter spliced pieces.~~

~~**R4409.6.17.2.2.3** For trusses spanning 20 feet (6 m) or less, the minimum percentage of grade marked members among top and bottom chords shall be 50 percent.~~

~~**R4409.6.17.2.2.4** For trusses spanning more than 20 feet (6 m) the minimum percentage of grade marked percent, and there shall be a minimum of one marked members among top and bottom chords shall be 75 web on each truss.~~

~~**R4409.6.17.2.2.5** All lumber shall be 2x4 nominal or larger, and no 2 inch (51 mm) nominal member shall be less in size than 11/2 inch (38 mm).~~

~~**R4409.6.17.2.2.6** The moisture content of all lumber used in wood truss fabrication shall not exceed 19 percent.~~

~~**R4409.6.17.2.2.7** Connector plates shall be not less than 20 gauge galvanized steel meeting ASTM A 653/A 653M or A 924/A 924M, and shall be identified by the manufacturer's stamp. The size and location of all plates shall be shown on the truss design drawings. Connectors shall have Product Approval.~~

~~**R4409.6.17.2.2.8** All connector plates over 3 inches (76 mm) and 25 percent of 3 inch (76 mm) or less, as per TPI standards, shall bear the name, logo or other markings, which clearly identify the manufacturer. Semiannually, plate manufacturers shall certify compliance with the provisions of Section 6 of the Truss Plate Institute, TPI 95 or latest edition, National Design Standard for Metal Plate Connected Wood Truss Construction , with respect to the grade of steel, thickness or gauge of material, and galvanizing to ASTM G 60 as a minimum. This certification requirement shall be satisfied by submitting by an approved independent laboratory to the product control division.~~

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~~**R4409.6.17.2.3 Fabrication.**~~

~~**R4409.6.17.2.3.1** Manufacturers of prefabricated wood truss assemblies shall obtain a valid certificate of competency from the authority having jurisdiction.~~

~~**R4409.6.17.2.3.2** Each truss shall bear the fabricators stamp on a web member and 75 percent shall be placed so as to be clearly visible after erection and before placement of ceiling.~~

~~**R4409.6.17.2.3.3** Multiple member girder trusses shall be predrilled at the truss plant for connection bolts only. Hanger bolt holes shall be drilled on site on location indicated on approved drawings.~~

~~**R4409.6.17.2.3.4** Each manufacturer or fabricator shall retain the services of applicable organizations among those listed below for monthly inspections of the lumber grade used in fabrication. Following each inspection, a report shall be submitted by the inspection agency to the authority having jurisdiction. All inspection agencies providing any type of inspection services shall be approved by the authority having jurisdiction.~~

~~For Pine:~~

~~Southern Pine Inspection Bureau or Timber Products Inspection Inc. or other grading agencies with appropriate jurisdiction.~~

~~For Douglas Fir, Hem Fir or Fir Larch:~~

~~Western Wood Products Association or West Coast Lumber Inspection Bureau. Timber Products Inspection Inc. or other grading agencies with appropriate jurisdiction.~~

~~**R4409.6.17.2.3.5** In addition, the fabricator shall employ an approved testing laboratory to conduct inspections of fabrication compliance. Such inspections shall be made unannounced and at random at least once a month. Following each inspection, a report on approved forms shall be submitted by the laboratory to the authority having jurisdiction and such reports shall bear the date, signature and seal of the supervising Florida registered architect or professional engineer.~~

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~~**R4409.6.17.2.3.6** When there is evidence of noncompliance with the provisions for fabrication set forth in this paragraph or with the approved plans, the authority having jurisdiction may require the inspection laboratory to make additional jobsite or plant inspections.~~

~~**R4409.6.17.2.3.7** The authority having jurisdiction may require load testing on noncomplying wood trusses. The test results shall be reported to the authority having jurisdiction.~~

~~**R4409.6.17.2.3.8** Failure of units tested or receipt of inspection reports indicating fabrication not in accordance with approved truss design drawings, or failure to submit required inspection and/or test reports, shall be cause for suspension or revocation of the certificate of competency of the manufacturer or fabricator.~~

~~**R4409.6.17.2.4.4** At gable ends, this diaphragm shall be designed to transmit lateral loads imposed on the gable to roof diaphragms and/or ceiling diaphragms where available. Where the wall supporting the gable is not designed to withstand lateral loads independent of the gable (by using shear walls or other methods), anchorage of the gable to the wall shall be designed to transmit the loads from the wall to the bracing and the bracing designed to transmit the lateral loads from the gable and wall to the roof diaphragms and/or ceiling diaphragms where available. Ceiling diaphragms that provide lateral support at gable walls shall be designed by the architect or professional engineer of record, and shall have continuous bottom chord bracing, end restraints, intermediate restraints and conditions so as to sufficiently transfer the lateral loads at the top of the gable end walls to the intersecting shear walls. In no case shall the rigid ceiling as defined in Section R4409.6.17.1.2 be used as an integral part of the system needed for lateral bracing of the gable end walls.~~

~~**SECTION R4409.8**~~

~~**HIGH VELOCITY HURRICANE ZONES — ANCHORAGE**~~

~~**R4409.8.1** Anchorage shall be continuous from the foundation to the roof and shall satisfy the uplift requirements of Section R4403.9.~~

~~**R4409.8.2 Joists.**~~

~~**R4409.8.2.1** Fire cuts into a masonry wall shall be anchored to the concrete beam on which they bear.~~

~~**R4409.8.2.2** Such anchors shall be spaced not more than 4 feet (1219 mm) apart and shall be placed at opposite ends across the building on the same run of joists.~~

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~~**R4409.8.3** Joists shall be nailed to bearing plates, where such plates occur, to each other where continuous at a lap and to the studs where such studs are contiguous; and ceiling joists shall be nailed to roof rafters where contiguous.~~

~~**R4409.8.4** Every roof rafter and/or roof joist shall be anchored to the beam or studs on which they bear, and roof rafters opposing at a ridge shall be anchored across the ridge as set forth in Section R4409.8.6.~~

~~**R4409.8.5 Anchorage to concrete.**~~

~~**R4409.8.5.1** Anchorage designed to resist uplift forces, securing wood to concrete shall be steel straps embedded in the concrete minimum of 4 inches (102 mm) with hooking devices to top steel of tie beam designed to withstand the uplift forces set forth by the design professional. Straps shall be an approved product. All anchors and related fasteners shall be galvanized.~~

~~**R4409.8.5.2** As an alternate to using the straps described in this section, the building official may approve other anchorage submitted by a Florida registered professional engineer or a Florida registered architect, proficient in structural design, provided that the information set forth in Section R4409.8.7(1), (2) and (3) submitted in connection with such anchors and such anchors and the proposed assembly otherwise comply with the requirements of this code.~~

~~**R4409.8.6 Anchorage to wood.**~~

~~**R4409.8.6.1** Anchorage designed to resist uplift forces, securing wood to wood shall be steel straps nailed to each member and shall be designed to resist uplift forces set forth by the design professional. Straps shall be an approved product. All anchors and relative nails shall be galvanized.~~

~~**R4409.8.6.2** As an alternate to using straps described in this section, the building official may approve other anchorage submitted by a Florida registered architect or a Florida registered professional engineer, proficient in structural design, provided that the information set forth in Sections R4409.8.7(1), (2) and (3) submitted in connection with such anchors and such anchors and the proposed assembly otherwise comply with the requirements of this code.~~

~~**R4409.8.7 Testing of anchoring.** Anchoring required by R4409.8. and R4409.8.6 shall be tested under the following criteria:~~

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1. Concrete to wood straps: Minimum design uplift load 700 pounds (3114 N), with 4 16d nails with upper end bent over truss chord and nailed. Nails shall be clinched. Anchors shall have devices to hook into upper tie beam steel and embedded a minimum of 4 inch (102 mm) in concrete.

2. Wood to wood straps: Minimum design uplift 700 lb (3114 N) with four 16d nails in each member.

3. Other anchors: Minimum design uplift 700 pounds (3114 N).

4. The criteria stated in Sections R4409.8.7(1), (2) and (3) above are minimum requirements for Product Approval. Anchor design and uplift forces shall be approved site for the inspector to.

SECTION R4409.9

HIGH-VELOCITY HURRICANE ZONES — SHEATHING

R4409.9.1 Floor sheathing.

R4409.9.1.3 Square-edged or spaced subflooring may be used only under a finish floor having a strength equal to or greater than 1/2 inch (12.7 mm) tongue-and-groove wood strip flooring; and under finish floors of less strength, a tongue-and-groove or plywood subfloor shall be required.

R4409.9.1.4 Lumber subflooring shall be not less than 5/8 inch (17 mm) thick when joists are spaced no more than 16 inches (406 mm) on center nor less than 3/4 inch (19 mm) thick when joists are spaced no more than 24 inches (610 mm) on center. End joints shall be on joists, joints shall be staggered and parallel to the joists, and ends at walls and similar places shall be supported by a ribbon or by blocking.

R4409.9.1.5 Plywood subfloors of C-D grade or Underlayment grade bonded to wood joist using adhesives meeting the requirements of ASTM D 3498 shall be applied as indicated in Section R4409.9.1.6.

R4409.9.1.6 Plywood subflooring shall be continuous over two or more spans with face grain perpendicular to the supports. The allowable spans shall not exceed those set forth in Table R4409.9.1.6.

TABLE R4409.9.1.6

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~~**PLYWOOD SUBFLOOR1**~~

~~**PANEL SPAN RATING[3]**~~	~~**MAXIMUM PLYWOOD SPAN (IN.)[3]**~~
~~32/16~~	~~16~~
~~40/20~~	~~20~~
~~48/24~~	~~24~~

~~For SI: 1 inch = 25.4 mm.~~

~~**Notes:**~~

~~1. These values apply for Sheathing C-D and C-C grades only. Spans shall be limited to values shown, and reduced for the possible effects of concentrated loads.~~

~~2. Span Ratings shall appear on all panels.~~

~~3. Plywood edges shall have approved tongue-and-groove joints or shall be supported with blocking unless 1/4 inch minimum thickness underlay is installed or 1/2 inch of approved cellular or lightweight concrete is installed or unless finish floor is 1 inch nominal woodstrip. Allowable uniform load based on deflection of 1/360 of span is 100 pounds per square foot.~~

~~4. May be 24 inches if nominal 1-inch wood strip finish floor is laid at right angles to joists.~~

~~**R4409.9.1.6.1** Plywood panels shall be nailed to supports with 6d common nails when up to 1/2 inch (13 mm) thick, 8d common nails when 19/32 to 3/4 inch (15 to 19 mm) thick and 10d common nails or 8d ring shank when 11/8 inches (29 mm) thick.~~

~~**R4409.9.1.6.2** Nail spacing shall be 6 inches (152 mm) o.c. at panel edges and 10 inches (254 mm) o.c. at intermediate supports~~

~~**R4409.9.1.8** Flooring shall be nailed with 8d common nails up to 3/4 inch (19 mm) thick, and 10d common nails or 8d ring shank nails when greater than 3/4 inch (19 mm) thick up to 11/8 inches (29 mm) thick.~~

~~**R4409.9.1.8.1** Nails shall be hand driven 8d common nails [(0.131 inch (3.3 mm) diameter by 21/2 (inches (63.5 mm) long with 0.281 inch (7.1 mm) diameter full round head)] or power driven 8d nails of the same dimensions (0.131 inch diameter by 21/2 inches long with 0.281 inch diameter full round head). Nails of a smaller diameter or length may be used only when approved by an architect or licensed engineer and only when the spacing is reduced accordingly.~~

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R4409.9.1.8.2 Nails shall be hand-driven 10d common nails (0.148 inch (3.8 mm) diameter by 3 inch (76 mm) long with 0.312 inch (7.9 mm) diameter full round head) or power-driven 10d nails of the same dimensions (0.148 inch diameter by 3 inch long with 0.312 inch diameter full round head). Nails of a smaller diameter or length may be used only when approved by an architect or licensed engineer and only when the spacing is reduced accordingly.

R4409.9.1.9 Nail spacing shall be 6 inches (152 mm) on center at panel edges and 10 inches (254 mm) on center at intermediate supports.

R4409.9.1.10 Flooring shall be nailed with 8d common nails not less than two in each board at each support.

R4409.9.1.11 Floors for heavy timber buildings shall be sheathed as specified for mill floors in Section R4409.9.13.

R4409.9.1.12 Flooring shall not extend closer than 1/2 inch (12.7 mm) from masonry walls.

TABLE R4409.9.1.13

ALLOWABLE SPAN FOR PLYWOOD COMBINATION SUBFLOOR UNDERLAYMENT[1]

(SINGLE FLOOR PANELS)

SPECIES GROUPS	MAXIMUM PLYWOOD SPAN (IN.)[2,3]		
16[4]	20[4]	24	48
1	1/2"	5/8"	3/4"
2,3	5/8"	3/4"	7/8"
4	3/4"	7/8"	1"
1,2 and 3			1 1/8"

For SI: 1 inch = 25.4 mm.

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~~Notes:~~

~~1. Applicable underlayment grade, C-C (plugged) and all grades of sanded Exterior type plywood.~~

~~2. Spans shall be limited to values shown, and reduced for the possible effects of concentrated loads.~~

~~3. Allowable uniform load based on deflection of 1/360 of span is 100 pounds per square foot except that total load for 48" on center is 65 pounds per square foot. Plywood edges shall have approved tongue-and-groove joints or shall be supported with blocking unless 1/4 inch minimum thickness underlay is installed or 1/2 inch of approved cellular or lightweight concrete is placed over the subfloor and the sheathing is rated for Exposure 1.~~

~~4. If a wood finish floor is laid perpendicular to the joists or supports, thickness shown~~

~~for 16 inch and 20 inch spans may be used for 24 inch spans.~~

~~**R4409.9.1.16 Diaphragm boundaries**. All floor sheathing acting as a diaphragm shall be attached to a minimum 2-inch (51 mm) thick nominal nailer with its depth equal to or one size greater than the intersecting top chord. The nailer shall be connected to the wall to resist the gravity loads from the floor, wind pressure/suction from the exterior wall and the diaphragm forces. The floor sheathing shall be attached to the nailer to resist the wind pressure/suction from the exterior wall and the diaphragm forces.~~

~~**R4409.9.2 Roof sheathing.**~~

~~**R4409.9.2.1** Wood roof sheathing shall be boards or shall be plywood.~~

~~**R4409.9.2.2** Board roof sheathing shall have a net thickness of not less than 3/4 inch (19 mm) when the span is not more than 28 inches (711 mm) or 5/8 inch (17 mm) when the span is not more than 24 inches (610 mm), shall have staggered joints and shall be nailed with 8d common nails not less than two in each 6 inch (152 mm) board nor three in each 8 inch (203 mm) board at each support.~~

~~**R4409.9.2.3** Plywood roof sheathing shall be rated for Exposure 1, have a minimum nominal thickness of 19/32 inch (21 mm) and shall be continuous over two or more spans with face grain perpendicular to supports. Roof sheathing panels shall be provided with a minimum of 2x4 edgewise blocking at all horizontal panel joints with edge spacing in accordance with manufacturer's specifications, for a distance at least 4 feet (1219 mm) from each gable end. The allowable spans shall not exceed those set forth in Table R4409.9.2.3.~~

~~**TABLE R4409.9.2.3**~~

~~**ALLOWABLE SPAN FOR PLYWOOD ROOF SHEATHING**[1]~~

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PANEL SPAN RATING[3]	MAXIMUM SPAN IF BLOCK OR OTHER EDGE SUPPORTS (IN.)	MAXIMUM SPAN WITHOUT EDGE SUPPORT (IN.)
32/16	24	24
40/20	40	32
48/24	48	36

For SI: 1 inch = 25.4 mm.

Notes:

1. Values apply to sheathing grade, C-C and C-D panels.

2. Span Rating appears on all C-C and C-D panels.

R4409.9.2.4 Plywood panels shall be nailed to supports with 8d ring shank nails.

R4409.9.2.5 Nail spacing shall be 6 inches (152 mm) on center at panel edges and at intermediate supports. Nail spacing shall be 4 inches (102 mm) on center at gable ends with either 8d ring shank nails or 10d common nails.

R4409.9.2.5.1 Nails shall be hand driven 8d ring shank or power driven 8d ring shank nails of the following minimum dimensions: (a) 0.113 inch (2.9 mm) nominal shank diameter, (b) ring diameter of 0.012 inch (0.3 mm) over shank diameter, (c) 16 to 20 rings per inch, (d) 0.280 inch (7.1 mm) full round head diameter, (e) 23/8 inch (60.3 mm) nail length. Nails of a smaller diameter or length may be used only when approved by an architect or licensed engineer and only when the spacing is reduced accordingly.

R4409.9.2.5.2 Nails at gable ends shall be hand driven 8d ring shank or power driven 8d ring shank nails of the following minimum dimensions: (a) 0.113 inch (2.9 mm) nominal shank diameter, (b) ring diameter of 0.012 inch (0.3 mm) over shank diameter, (c) 16 to 20 rings per inch, (d) 0.280 inch (7.1 mm) full round head diameter, (e) 23/8 inch (60.3 mm) nail length or as an alternative hand driven 10d common nails [(0.148 inch (3.8 mm) diameter by 3 inches (76 mm) long with 0.312 inch (7.9 mm) diameter full round head)] or power driven 10d nails of the same dimensions [0.148 inch (3.8 mm) diameter by 3 inches (76 mm) long with 0.312 inch (8 mm) diameter full round head]. Nails of a smaller diameter or length may be used only when approved by an architect or professional

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~~engineer and only when the spacing is reduced accordingly. Other products with unique fastening methods may be substituted for these nailing requirements as approved by the building official and verified by testing.~~

~~**R4409.9.2.5.3** Other products with unique fastening methods may be substituted for these nailing requirements as approved by the building official and verified by testing.~~

~~**R4409.9.2.6** Roof sheathing for heavy timber construction shall comply with Section R4409.6.13 of this code.~~

~~**R4409.9.2.7 Diaphragm boundaries.** All roof sheathing acting as a diaphragm shall be attached to a minimum 2-inch (51 mm) thick nominal member with its depth equal to or one size greater than the intersecting top chord. This shall be achieved with a continuous structural subfascia, fascia or blocking at 4 inches (102 mm) on center with nails as required for the appropriate thickness of sheathing.~~

~~**R4409.9.2.8** When existing roofs are reroofed to the point that the existing roofing is removed down to the sheathing, the existing roof sheathing shall be re-nailed with 8d common nails [(0.131 inch (3.3 mm) diameter by 21/2 inches (63.5 mm) long with 0.281 inch (7.9 mm) diameter full round head)]. Nail spacing shall be 6 inches (152 mm) on center at panel edges, 6 inches (152 mm) on center at intermediate supports and where applicable 4 inches (102 mm) on center over gable ends and subfascia. Existing fasteners may be used to achieve such minimum spacing.~~

~~**R4409.9.3 Storm sheathing.** Exterior stud walls shall be sheathed to resist the racking load of wind as set forth in Section R4403.9 and the concentrated loads that result from hurricane-generated wind-borne debris as set forth in Section R4403.16 of this code and shall be at a minimum any of the following types:~~

~~1. Tightly fitted, diagonally placed boards not less than 5/8 inch (17 mm) thickness, nailed with three 8d common nails to each support for 1 inch by 6 inch (25 mm by 152 mm) boards and four 8d common nails for 1 inch by 8 inch (25 mm by 203 mm) boards.~~

~~2. Wall sheathing shall be plywood, or Product Approved structural panel, rated Exposure 1 with a minimum thickness of 19/32 inch (15 mm) and shall be applied to studs spaced not more than 16 inches (406 mm) on center. Wall sheathing shall be continuous over three or more supports and shall be nailed to such supports with 8d common nails. Nail spacing shall not exceed 6 inches (152 mm) on center at panel edges and all intermediate supports. Nail spacing shall be 4 inches (102 mm) on center at corner studs, in all cases.~~

~~3. When plywood panel, or product approved structural panel, sheathing is used, building paper and diagonal wall bracing can be omitted.~~

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~~4. When siding such as shingles nailed only to plywood or product approved structural panel sheathing, the panel shall be applied with face grain across studs.~~

~~**R4409.9.4 Exterior wall cladding.**~~

~~**R4409.9.4.1** Plywood, if protected with stucco, may serve for both sheathing and exterior cladding provided:~~

~~1. The panel thickness shall be not less than 19/32 inch (15 mm) and Texture 1-11 panels, and the supporting studs shall be spaced not more than 16 inches (406 mm) o.c.~~

~~2. All joints shall be backed solidly with 2-inch (51 mm) nominal blocking or studs or the joints shall be lapped horizontally or otherwise watertight.~~

~~3. Nailing shall be as set forth in Section 4409.9.3(2).~~

~~**R4409.9.4.2** Where storm sheathing is provided in accordance with Section R4409.9.3, exterior cladding may be one of the following:~~

~~1. Wood siding shall be installed according to its Product Approval.~~

~~2. Wood shingles or shakes attached to the storm sheathing, and/or to nailing boards or shingle backer securely attached to the storm sheathing. The minimum thickness of wood shingles or shakes between nailing boards shall be 3/8 inch (9.5 mm).~~

~~3. Hardboard of siding quality for exterior use shall be applied in accordance with the Product Approval.~~

~~**SECTION R4409.11**~~

~~**HIGH VELOCITY HURRICANE ZONES**~~

~~**CONNECTORS**~~

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~~**R4409.11.1** The allowable loads on all types of connectors shall be as set forth in the standards listed in Section R4409.1.4 and Table R4409.11.1.~~

~~**R4409.11.2** Nails, bolts and other metal connectors that are used in locations exposed to the weather shall be galvanized or otherwise corrosion resistant.~~

~~**R4409.11.3** In general, nails shall penetrate the second member a distance equal to the thickness of the member being nailed thereto. There shall be not less than two nails in any connection.~~

~~**R4409.11.4** Except for wood-based structural-use panels and other laminated members manufactured under technical control and rigid inspection, gluing shall not be considered an acceptable connector in lieu of the connectors herein specified.~~

~~**R4409.11.5** Safe loads and design practice for types of connectors not mentioned or fully covered herein shall be determined by the building official before approval.~~

~~**SECTION R4409.12**~~

~~**HIGH-VELOCITY HURRICANE ZONES**~~

~~**WOOD SUPPORTING MASONRY**~~

~~**R4409.12.1** Wood shall not support masonry or concrete except as permitted in Sections R4409.12.2 and R4409.12.3.~~

~~**R4409.12.2** Wood foundation piles may be used to support concrete or masonry.~~

~~**SECTION R4409.13**~~

~~**HIGH-VELOCITY HURRICANE ZONES**~~

~~**PROTECTION OF WOOD**~~

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~~**R4409.13.1** Wood piles shall be treated with preservatives as set forth in Section R4404.7.1.2.~~

~~**R4409.13.2 Preservative treated or durable species wood.**~~

~~**R4409.13.2.1** All wood used in areas of building or structures where the climatic condition is conducive to deterioration which would affect the structural safety shall be treated in an approved method with an approved preservative or shall be of an approved durable species.~~

~~**R4409.13.2.2** All wood in contact with or embedded in the ground that supports of permanent structures shall be approved pressure-treated wood suitable for ground contact use.~~

~~**Exceptions:**~~

~~1. Naturally durable wood or pressure-treated wood may be used in contact with the ground for support of structures other than buildings and walking surfaces.~~

~~2. Untreated wood may be used for supports where entirely below water level and continuously submerged in fresh water.~~

~~**R4409.13.2.3** Sleepers and sills on concrete slabs in contact with the ground, wood joists and the underside of wood structural floors without joists less than 18 inches (457 mm) above ground; or wood girders less than 12 inches (305 mm) from exposed ground within the crawl space under buildings, shall be treated in an approved method with an approved preservative, or shall be of an approved durable species.~~

~~**R4409.13.2.4** All wood not separated from and/or in direct contact with concrete masonry, including sills, sleepers, plates, posts, columns, beams, girders and furring; shall be treated in an approved method with and approved preservative, or shall be of an approved durable species.~~

~~**R4409.13.2.5** The expression "pressure-treated wood" refers to wood meeting the retention, penetration and other requirements applicable to the species, product, treatment and conditions of use in the approved standards of the American Wood Preservers Association (AWPA) and Quality Control Program for Softwood Lumber, Timber and Plywood Pressure Treated with Water-borne Preservatives for Ground Contact Use in Residential and Light Commercial Foundations for the American Wood Preservers Bureau.~~

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R4409.13.2.6 The expression "durable wood" refers to the heartwood of the following species with the exception that an occasional piece with corner sapwood may be included if 90 percent or more of the width of each side on which it occurs is heartwood:

Decay resistant: Redwood, Cedars, Black Locust.

Termite Resistant: Redwood, Bald and Eastern Red Cedar.

R4409.13.2.7 Where durable species of wood are used as structural members in buildings and structures, the stress grade shall be not less than that required in Section R4409.4.

R4409.13.2.8 When wood pressure treated with a water-borne preservative is used in enclosed locations where drying in service cannot readily occur, such wood shall have a moisture content of 19 percent or less before being covered with insulation, interior wall finish, floor covering or other material.

R4409.13.2.9 All wood framing less than 8 inches (203 mm) from exposed earth in exterior walls that rest on concrete or masonry foundations shall be approved naturally durable species or pressure-treated wood.

R4409.13.2.10 All posts, poles and columns embedded in concrete which is in contact with ground and supporting permanent structures shall be approved pressure treated wood suitable for ground contact use except naturally durable wood may be used for posts, poles and columns embedded in concrete for structures other than buildings and walking surfaces or in structures where wood is above ground level and not exposed to the weather.

R4409.13.2.11 For conditions not specifically covered, compliance with American Forest & Paper Product Association Wood Construction Data #6, Design of Wood Frame Structures for Permanence, shall be deemed as compliance with this code.

R4409.13.3 Ventilation.

R4409.13.3.1 Ventilation of crawl spaces. Crawl spaces under buildings without basements shall be ventilated by approved mechanical means or by openings in foundation walls. Ventilation openings shall be covered with a corrosion-resistant wire mesh with openings not greater than 1/16 inch (1.6 mm).

R4409.13.3.1.1 Where practicable, ventilating openings shall be arranged on three sides.

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R4409.13.3.1.2 The minimum total area of ventilating openings shall be 2 square feet (0.19 m2) for each 15 linear feet (4.6 m) or a fraction thereof of exterior wall. Such opening need not be placed in the front of the building. Where mechanical ventilation is used, the ventilation rate shall be at least six air changes per hour.

R4409.13.3.2 Ventilation of attic spaces. Attic space between ceiling joists and roof rafters shall be effectively cross-ventilated by approved mechanical means or with vent openings. The ratio of total net free ventilating area to the area of the ceiling shall be not less than 1/150.

Exception: The venting ratio may be reduced to 1/300 where at least 50 percent of the installed ventilating area is provided by a ventilation system located in the upper portion of the space to be ventilated [within 18 inches (457 mm) of ridge]. The balance of the required ventilation shall be provided by eave or cornice vents.

R4409.13.3.2.1 Where practical, ventilating openings shall be arranged on three sides.

R4409.13.3.2.2 Where mechanical ventilation is used, the ventilation rate shall be at least six air changes per hour.

R4409.13.3.2.3 All openings into the attic space of any habitable building shall be covered with screening, hardware cloth or equivalent to prevent the entry of birds, squirrels, rodents, etc. The openings therein shall not exceed 1/8 inch (3.2 mm).

R4409.13.3.2.4 For existing structures that were built before 1992 without soffit ventilation, and where in the opinion of the building official the soffit ventilation would be impossible or impractical to install, the building official may determine the extent to which the existing structure shall be made to conform to the requirements of this section.

R4409.13.3.2.5 Unvented attic assemblies. Unvented attic assemblies shall be permitted if all the following conditions are met:

1. The unvented attic space is completely contained within the building thermal envelope.

2. No interior vapor retarder is installed on the ceiling side (attic floor) of the unvented attic assembly.

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~~3. Where wood shingles or shakes are used, a minimum continuous ¼ inch (6 mm) vented air space separates the shingles or shakes from the roofing underlayment.~~

~~4. One of the following shall be met, depending on the air permeability of the insulation under the structural roof sheathing:~~

~~a. Air impermeable insulation only. Insulation shall be applied in direct contact to the underside of the structural roof sheathing.~~

~~b. Air permeable insulation only. In addition to air permeable insulation installed directly below the structural sheathing, at least R-5 rigid board or sheet insulation shall be installed directly above the structural roof sheathing for condensation control.~~

~~c. Air impermeable and air permeable insulation. At least R-5 air impermeable insulation shall be applied in direct contact to the underside of the structural roof sheathing for condensation control. The air permeable insulation shall be installed directly under the air impermeable insulation.~~

~~R4409.13.4 Debris.~~

~~R4409.13.4.2~~ ~~In buildings or portions thereof having wood first-floor systems, all wood forms which have been used in placing concrete, if within the ground or less than 18 inches (457 mm) above the ground, shall be removed before the building is occupied or used for any purpose.~~

~~R4409.13.4.3~~ ~~Loose or casual wood shall not be stored in direct contact with the ground under any building, and this space must be thoroughly cleaned of all wood and debris.~~

~~TABLE R4409.13.1~~

~~NAIL CONNECTION FOR WOOD MEMBERS~~

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S5016 Text Modification

CONNECTION	COMMON NAILS	NUMBER OR SPACING
Joists to sill or girder, toe nail	16d	2
Bridging to joist, toe nail	8d	2 each end
1" x 6" subfloor or less to each joist, face nail	8d	2
Over 1" x 6" subfloor to each joist, face nail	8d	3 + 1 for each size increase
2" subfloor to joist or girder, blind and face nail	16d	2
Sole plate to joist or blocking, face nail	16d	16" o.c.
Top or sole plate to stud, end nailed	16d	2
Stud to sole plate, toe nail	3d	3 or 2 16d
Doubled studs, face nail	16d	24" o.c.
Doubled top plates, face nail	16d	16" o.c.
Top plates, laps and intersections, face nail	16d	2
Continuous header, two pieces	16 d	16" o.c. along each edge
Ceiling joists to plate, toe nail	16d	2
Continuous header to stud, toe nail	16d	3
Ceiling joists, laps over partitions, face nail	16d	3
Ceiling joists to parallel rafters, face nail	16d	3
Rafter plate, toe nail	16d	3
1" x 6" sheathing or less, to each bearing, face nail	8d	2
Over 1" x 6" sheathing, to each bearing, face nail	8d	3 + 1 for each size increase
Built up corner studs, face nail	16d	30" o.c.
Built up girders and beams	20d	32" o.c. at top and bottom and staggered, 2 at ends and at each splice
2 inch planks	16d	2 each bearing

For SI: 1 inch = 25.4 mm.

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~~Note: In spacing specifications, o.c. means "on center."~~

~~**R4409.13.6.1** The building official shall inspect existing buildings having wood stud exterior walls for which application for a permit for exterior wall coverings is made and shall have the authority to order the uncovering of structural elements for inspection and to require necessary repairs as a part of such approval for a permit, or may order demolition.~~

~~SECTION R4409.15~~

~~HIGH-VELOCITY HURRICANE ZONES — WOOD FENCES~~

~~**R4409.15.1** Wood fences, so located on a property that by zoning regulations they cannot be used as a wall of a building, shall be constructed to meet the minimum specifications in Sections R4409.15.2 and R4409.15.3.~~

~~**R4409.15.2** Fences not exceeding 6 feet (1829 mm) in height, shall be constructed to meet the following minimum requirements: from nominal 4 x 4 x 8 feet (2438 mm) long posts No. 2 Grade or better spaced 4 feet (1219 mm) on center, and embedded 2 feet (610 mm) into a concrete footing 10 inches (254 mm) in diameter and 2 feet (610 mm) deep.~~

~~**R4409.15.3** Fences not exceeding 5 feet (1524 mm) or 4 feet (1219 mm) in height shall be constructed as provided in Section R4409.15.2, except that the spacing of posts may be increased to 5 feet (1524 mm) and 6 feet (1829 mm) on center for these heights, respectively.~~

~~SECTION R4409.17~~

~~HIGH-VELOCITY HURRICANE ZONES — WOOD BLOCKING~~

~~R4409.17.1 General.~~

~~**R4409.17.1.1** Blocking is defined as wood pieces attached to the roof deck or to each other for the purpose of securing roof membrane or accessories.~~

~~**R4409.17.1.2** Wood blocking attachment for buildings greater than 40 feet (12.2 m) in height must be designed by a registered architect or professional engineer.~~

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~~**R4409.17.1.3** Wood blocking attachment for lightweight insulating concrete, gypsum concrete, cementitious wood fiber and cellular concrete decks shall be designed by a registered architect or licensed engineer. The decks themselves shall not be used as a wood blocking attachment substrate.~~

~~**R4409.17.1.4** Wood blocking shall not be less than nominal 2x6. The maximum unsupported overhang shall be 2 inches (51 mm). When the maximum overhang is employed, a nominal 2x8 blocking shall be installed.~~

~~**R4409.17.1.5** In recover applications, wood blocking may be reduced to nominal 1 inch (25 mm), providing the attachment is secured in compliance with this code.~~

~~**R4409.17.1.6** Sound wood blocking may be reused in a recover or reroof application, providing the attachment is secured in compliance with the requirements of this code.~~

~~**R4409.17.1.7** A fastener shall be placed within 3 inches (761 mm) of the end of each section of wood blocking and a 1/4 inch (6 mm) gap shall be left between each section of wood blocking. No piece of wood shall have less than two fasteners.~~

~~**R4409.17.1.8** Fasteners other than nails shall be predrilled prior to attachment and countersunk to be flush with the surface of the wood blocking.~~

~~**R4409.17.1.9** Wood shall be protected according to Section R4409.13.~~

~~**R4409.17.1.10** Powder actuated fasteners shall not be used in wood blocking attachment.~~

~~**R4409.17.2 Attachment to masonry block and concrete.**~~

~~**R4409.17.2.1** Prior to the installation of wood blocking to standard weight masonry block, the two top courses shall be solidly filled with concrete or a tie beam shall be provided as required by this code.~~

~~**R4409.17.2.2** The fastener's average withdrawal resistance per lineal foot shall be not less than 250 pounds per foot (3649 N/m) after the application of a 4:1 safety factor.~~

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~~**R4409.17.2.3** The pullover value of the proposed fastener though the wood blocking shall be not less than 125 percent of the design load of the proposed fastener. If less, a larger bearing washer shall be added to the fastener assembly to meet this requirement. Wood blocking thickness shall be not less than 11/2 inch (38 mm) if a bearing washer is required.~~

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SECTION R4409
HIGH-VELOCITY HURRICANE ZONES—WOOD

R4409.1 ~~General~~ Refer to Chapter 23 of the Florida Building Code, Building.

~~**R4409.1.1 Design.** Wood members and their fastenings shall be designed to comply with this code by methods based on rational analysis or approved laboratory testing procedures, both performed in accordance with fundamental principles of theoretical and applied mechanics.~~

~~**R4409.1.2 Workmanship.** Wood members shall be framed, anchored, tied and braced to develop the strength and rigidity necessary for the purposes for which they are used and to resist the loads imposed as set forth in this code. Wood construction shall be in conformance with the tolerances, quality and methods of construction as prescribed by the standards in Chapter 43 of this code.~~

~~**R4409.1.3 Fabrication.**~~

~~**R4409.1.3.1** Preparation, fabrication and installation of wood members and the glues, connectors and mechanical devices for fastening shall conform to good engineering practice.~~

~~**R4409.1.3.2** Any person desiring to manufacture or fabricate wood truss assemblies shall obtain a certificate of competency from the authority having jurisdiction.~~

~~**R4409.1.4** The following standards, as set forth in Chapter 43 of this code, are hereby adopted for the design and quality of wood members and their fastenings:~~

~~**R4409.1.4.1** American Hardboard Products Association~~
~~887 B Wilmette Road, Palatine, IL 60067 AHA~~

~~1. Basic Hardboard ANSI/AHA A135.4-1982~~

~~2. Prefinished Hardboard Paneling ANSI/AHA A135.5-1982~~

~~3. Hardboard Siding ANSI/AHA A135.6-1990~~

~~4. Cellulosic Fiberboard ANSI/AHA A194.1-1985~~

~~5. Recommended Product and Application Specification - Structural Insulating Roof Deck, I.B. Spec. No. 1~~

~~6. Recommended Product and Application Specification - 1/2 inch Fiberboard Nail-Base Sheathing I.B. Spec. No. 2~~

~~7. Recommended Product and Application Specification - 1/2 inch Intermediate Fiberboard Sheathing I.B. Spec. No. 3~~

~~**R4409.1.4.2** American Institute of Timber Construction~~
~~333 West Hampden Avenue, Englewood, CO80110 AITC~~

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1. Typical Construction Details AITC 104

2. Code of Suggested Practices AITC 106

3. Standard for Heavy Timber Construction AITC 108

4. Standard for Preservative Treatment for Structural Glued Laminated Timber AITC 109

5. Standard Appearance Grades for Structural Glued Laminated Timber AITC 110

6. Standard for Tongue and Groove Heavy Timber Roof Decking AITC 112

7. Standard for Dimensions of Glued Laminated Structural Members AITC 113

8. Standard Specifications for Structural Glued Laminated Timber of Softwood Species AITC 117

9. Standard Specifications for Hardwood Glued Laminated Timber AITC 119

10. Technical Report No. 7, Calculation of Fire Resistance of Glued Laminated Timber

11. Structural Glued Laminated Timber ANSI/AITC A190.1

TABLE R4408.11
CHAIN LINK FENCE MINIMUM REQUIREMENTS

Fence Height (ft)	Terminal Post Dimensions (in inches) (o.d. × wall thickness)	Line Post Dimensions (in inches) (o.d. × wall thickness)	Terminal Post Concrete Foundation Size (diameter × depth) (in inches)	Line Post Concrete Foundation Size (diameter × depth) (in inches)
Up to 4	23/8 × 0.042	15/8 × 0.047	10 × 24	8 × 24
Over 4 to 5	23/8 × 0.042	17/8 × 0.055	10 × 24	8 × 24
Over 5 to 6	23/8 × 0.042	17/8 × 0.065	10 × 24	8 × 24
Over 6 to 8	23/8 × 0.110	23/8 × 0.095	10 × 36	10 × 36
Over 8 to 10	27/8 × 0.110	23/8 × 0.130	12 × 40	10 × 40
Over 10 to 12	27/8 × 0.160	27/8 × 0.120	12 × 42	12 × 42

For SI: 1 inch = 25.4 mm.

Notes:

1. This Table is applicable only to fences with unrestricted airflow.
2. Fabric: 121/2 gauge minimum.
3. Tension Bands: Use one less than the height of the fence in feet evenly spaced.
4. Fabric Ties: Must be minimum the same gauge of the fabric.
5. Fabric Tie Spacing on the Top Rail: Five ties between posts, evenly spaced.
6. Fabric Tie Spacing on Line Posts: One less than height of the fence in feet, evenly spaced.
7. Either top rail or top tension wire shall be used.
8. Braces must be used at Terminal Posts if top tension wire is used instead of Top Rail.
9. Post Spacing: 10 foot (3 m) on center maximum.
10. Posts shall be embedded to within 6 inch (152 mm) from the bottom of the foundation.

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~~11. In order to follow the contour of the land, the bottom of the fence may clear the contour of the ground by up to 5 inch (127 mm) without increasing table values to the next higher limit.~~

R4409.1.4.3 ~~APA The Engineered Wood Association (Formerly APA American Plywood Association) P.O. Box 11700, Tacoma, WA 98411~~

~~1. APA Design Construction Guide, Residential and Commercial E30D~~

~~2. Plywood Design Specification Y510J~~

~~3. Plywood Design Specification-Design and Fabrication of Plywood Beams Supplement No. 1 S811~~

~~4. Plywood Design Specification-Design and Fabrication of Plywood Beams Supplement No. 2 S812~~

~~5. Plywood Design Specification-Design and Fabrication of Plywood Stressed-Skin Panels Supplement No. 3 U813~~

~~6. Plywood Design Specifications-Design and Fabrication of Plywood Sandwich Panels Supplement No. 4 U814~~

~~7. Plywood Design Specifications-Design and Fabrication of All-Plywood Beams. Supplement No. 5 H815~~

~~8. Plywood Folded Plate, Laboratory Report 21 V910~~

~~9. APA Design/Construction Guide Diaphragms L350~~

~~10. Performance Standards and Policies for Structural Use Panels PRP 108~~

~~11. 303 Siding Manufacturing Specifications B840~~

R4409.1.4.4 ~~American Society for Testing Materials
1916 Race Street, Philadelphia, PA 19103-1187 ASTM~~

~~1. Standard Test Methods for Mechanical Fasteners in Wood D 1761~~

~~2. Accelerated Weathering on Fire Retardant Treated Wood for Fire Testing D 2898~~

~~3. Surface Burning Characteristics of Building Materials E 84~~

~~4. Hygroscopic Properties of Fire-Retardant Wood and Wood-Base Products D 3201~~

~~5. Standard Specifications for Adhesives for Field Gluing Plywood to Lumber Framing for Floor Systems D 3498~~

R4409.1.4.5 ~~American Wood Preservers Association
P.O. Box 361784, Birmingham, AL 35236-1784~~

~~1. AWPA Use Category Systems Standard U1~~

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~~2. AWPA Standard M4 Care of Pressure Treated Wood Products~~

~~**R4409.1.4.6** National Institute for Standards and Technology Standard Development Services Section, Standards Application and Analysis Division, Washington, D.C. 20234 NIST~~

~~1. Mat-Formed Particleboard CS236~~

~~2. Structural Glued Laminated Timber PS56~~

~~3. Construction and Industrial Plywood PS1~~

~~4. American Softwood Lumber Standard PS20~~

~~5. Performance Standard for Wood Based Structural Use Panels PS2*~~

~~*All wood-based structural panels except plywood shall have Product Approval and shall be tested in accordance with High-Velocity Hurricane Zone testing protocols.~~

~~**R4409.1.4.7** American Forest and Paper Association 1111 19 Street NW, Washington, D.C. 20036~~

~~1. ANSI/AF&PA National Design Specification for Wood Construction, 2001~~ 2005

~~2. ANSI/AF&PA Design Values for Wood Construction, 2001~~ 2005

~~3. Wood Structural Design Data, 1992~~

~~4. Span Tables for Joists and Rafters, 2005~~

~~5. Design Values for Joists and Rafters, 2005~~

~~6. Wood Construction Data No. 1, Details for Conventional Wood Frame Construction, 2001~~

~~7. Wood Construction Data No. 4, Plank-and-Beam Framing for Residential Building, 2003~~

~~8. Wood Construction Data No. 5, Heavy Timber Construction Details,~~ 2004

~~9. Wood Construction Data No. 6, Design of Wood Frame Structures for Permanence, 2006~~

~~10. ANSI/AF&PA PWF-2007 Permanent Wood Foundation (PWF) Design Specification, 2007~~

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11. ANSI/AF&PA WFCM-2001, Wood Frame Construction Manual for one and Two-Family Dwellings, 2001

R4409.1.4.8 Timber Company, Inc.
2402 Daniels Street, Madison, WI 53704 TECO

Performance Standards and Policies for Structural use Panels. PRP 133

R4409.1.4.9 Truss Plate Institute
218 N. Lee Street, Suite 312, Alexandria, VA 22314

1. National Design Standard for Metal Plate Connected Wood Truss Construction (Excluding Chapter 2).

2. Building Component Safety Information (BCSI 1-03) Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses [A joint publication with the Wood Truss Council of America (WTCA)].

SECTION R4409.2
HIGH-VELOCITY HURRICANE ZONES—QUALITY

R4409.2.1 Identification. All lumber used structurally, including end jointed lumber, shall be identified by the grade mark of a lumber grading or inspection bureau or agency approved by the Board of Review of the American Lumber Standards Committee or the Canadian Lumber Standards Administrative Board; except that precut material, rough sawn lumber and lumber thicker than 2 inches (51 mm) may be covered by a certificate of inspection in lieu of grade marking. The glued joints in end jointed lumber, when used for load supporting purposes, shall be certified to be in accordance with the appropriate grading rules.

R4409.2.1.1 Structural glued laminated timber shall be manufactured and identified as required in ANSI/AITC 190.1 as adopted in Section R4409.1.4.

R4409.2.1.2 All wood-based structural panels used structurally, including siding, roof sheathing, wall sheathing, floor sheathing, diaphragms and built-up members, shall be identified for grade and exposure level by the grade stamp of an approved testing and grading agency indicating conformance with PS 1, PS 2, APA PRP 108 or TECO PRP 133 as adopted in Section R4409.1.4.

R4409.2.1.3 Wood shingles and/or shakes shall be identified by the grade mark of an approved grading or inspection bureau or agency.

R4409.2.1.4 Fiberboard for its various uses shall conform to ANSI/AHA A 194.1.

R4409.2.1.5 Hardboard shall conform to AHA standards as adopted in Section R4409.1.4, and shall be identified as to classification.

R4409.2.1.6 Particleboard shall conform to the mat-formed particleboard standard, NIST CS236, as adopted in Section R4409.1.4.6, and shall be identified by the grade mark or certificate of inspection issued by an approved agency.

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R4409.2.1.8 All lumber, sawn timber, wood-based structural panels and poles supporting permanent structures and required by this code to be pressure treated and as described in the AWPA standards shall bear the quality mark of an approved inspection agency which maintains continued supervision, testing and inspection over the product. Agencies shall be accredited in accordance with the procedures of the American Lumber Standard (PS 20) or approved equivalent.

R4409.2.1.9 Pressure treated poles shall be treated in accordance with AWPA U1 for sawn timber posts (Commodity Specification A, Use Category 4B) and for round timber posts (Commodity Specification B, Use Category 4B).

R4409.2.1.10 The quality mark shall contain, as a minimum, the following information:

1. The treating company and plant location

2. The AWPA standard to which the product is treated

3. The trademark of an approved inspection agency which maintains continued supervision, testing and inspection over the quality of the product as described in the AWPA standards

4. The preservative used

5. The amount of retention of the chemical per cubic foot of wood

6. If applicable, the method of drying after treatment

7. The purpose for which the wood has been treated: ground contact, above ground or foundation

Exception: When the size of individual pieces, e.g. lumber less than 1 inch (25 mm) in nominal thickness, or lumber less than nominal 1x5 or 2x4, or lumber 36 inches (914 mm) and shorter, except that 5/4x4 shall be quality marked, prevents application of full legible marks, the quality mark shall be applied by stamping the faces of exterior pieces or by end labeling not less than 25 percent of the pieces of a bundled unit.

R4409.2.1.11 All wood-based structural panels, including those made of fiberboard, hardboard and particleboard shall have Product Approval. Product Approval shall be given upon certification by an approved independent testing laboratory that the product:

1. Complies with the applicable standards set forth above

2. The product complies with the manufacturer's published design properties before and after a wet-dry cycle

3. The product when tested dry maintains a safety factor of 2:1 and when tested after the cycles specified in Section R4409.2.1.11(2) above maintains a safety factor of 1.5:1. Testing shall be as specified in the testing protocol.

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R4409.2.2 Wood-based structural panels permanently exposed in outdoor locations shall be rated for exterior use. When used for roof sheathing exposed to the outdoors on the underside or used structurally for wall, floor or roof cladding or for diaphragms, the panels shall be rated for Exposure 1 or exterior use.

R4409.2.3 All lumber 2 inches (51 mm) or less in thickness shall contain not more than 19 percent moisture at the time of permanent incorporation in a building or structure and/or at the time of treatment with a wood preservative.

R4409.2.4 Grade and species.

R4409.2.4.1 All structural wood members not limited by other sections of this section shall be of sufficient size and capacity to carry all loads as required by Section R4403 without exceeding the allowable design stresses specified in the National Design Specification for Wood Construction and in compliance with Section R4409.4.

R4409.2.4.2 Lumber boards used for floor and roof sheathing shall be in accordance with Table R4409.2.4.2.

TABLE R4409.2.4.2
MINIMUM GRADE REQUIREMENTS: BOARD GRADES

FLOOR OR ROOF SHEATHING	GRADING RULES
Utility	NLGA, WCLIB or WWPA
No. 4 Common or Utility	NLGA, WCLIB, WWPA, NHPMA or NELMA
No. 3	SPIB
Merchantable	RIS

SECTION R4409.3
Reserved

SECTION R4409.4
HIGH-VELOCITY HURRICANE ZONES
UNIT STRESSES

R4409.4.1 General.

R4409.4.1.1 Lumber used for joists, rafters, trusses, columns, beams and/or other structural members shall be of no less strength than No. 2 grade of Southern Pine, Douglas Fir-Larch, Hem-Fir or Spruce-Pine-Fir. Joists and rafters shall be sized according to AF&PA Span Tables for Joists and Rafters adopted in Section R4409.1.4.

R4409.4.1.2 Lumber used for studs in exterior walls and interior bearing walls shall be of no less strength than Stud Grade of Southern Pine, Douglas Fir Larch, Hem Fir or Spruce Pine Fir and capable of resisting all loads determined in accordance with Section R4403. The unbraced height of the wall shall be no more than 8 feet 6 inches (2.6 m) (including top and bottom plates). Heights may be increased where justified by rational analysis prepared by a registered professional engineer or registered architect proficient in structural design.

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R4409.4.1.4 The designer shall specify on the design drawings the size, spacing, species and grade of all load-supporting members.

R4409.4.2 Allowable stress design value may be modified for repetitive, duration, etc., factors where design is by a registered professional engineer or registered architect proficient in structural design or where such modified values are reflected in the tables of the standards in Section R4409.1.4.

SECTION R4409.5
HIGH-VELOCITY HURRICANE ZONES—
VERTICAL FRAMING

R4409.5.1 Studs in bearing and exterior walls. Studs in walls framing over 8 feet 6 inches (2.6 m) (including top and bottom plates) or supporting floor and roof loads shall be designed by rational analysis prepared by a registered professional engineer or registered architect proficient in structural design.

R4409.5.1.1 Minimum size. Studs shall be not less than 2x6 for exterior walls or 2x4 for interior bearing or load resisting walls unless designed by rational analysis by a registered licensed engineer or registered architect proficient in structural design.

R4409.5.1.2 Spacing. Studs shall be spaced not more than 16 inches (406 mm) on center unless designed by rational analysis as a system of columns and beams by a registered licensed engineer or registered architect proficient in structural design.

R4409.5.1.3 Placing.

R4409.5.1.3.1 Studs in exterior and bearing walls shall be placed with the longer dimension perpendicular to the wall.

R4409.5.1.3.2 Studs in exterior walls and in bearing walls shall be supported by foundation plates, sills, or girders or floor framing directly over supporting walls or girders. Stud bearing walls when perpendicular to supporting joists may be offset from supporting walls or girders not more than the depth of the joists unless such joists are designed for the extra loading conditions.

R4409.5.1.3.3 Stud walls framing into base plates of exterior walls and interior bearing walls resting on masonry or concrete shall be anchored past the plate to the masonry or concrete, or shall be anchored to a sill plate which is anchored in accordance with Section R4409.5.1.4.1 when the net wind uplift is up to 300 pounds per foot (4378 N/m).

R4409.5.1.4 Sills and/or base plates.

R4409.5.1.4.1 Sills and/or base plates, where provided in contact with masonry or concrete, shall be of an approved durable species or be treated with an approved preservative and shall be attached to the masonry or concrete with 1/2 inch (13 mm) diameter bolts with oversized washer spaced not over 2 feet (610 mm) apart and embedded not less than 7 inches (178 mm) into a grout filled cell of masonry or into concrete. Base plates shall be placed in a recess 3/4 inch (19 mm) deep and the width of the base plate at the edge of a concrete slab, beam/slab or any other type of construction which uses a masonry surface or concrete slab, or be provided with an alternate waterstop method as approved by the building official. Alternate methods of

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~~anchorage may be designed by rational analysis by a registered professional engineer or a registered architect proficient in structural design.~~

~~**R4409.5.1.4.2** Where the base plate of a bearing wall is supported on joists or trusses running perpendicular to the wall and the studs from the wall above do not fall directly over a joist or truss, a double base plate or a single base plate supported by a minimum 2x4 inset ribbon shall be used to support the upper stud wall.~~

~~**R4409.5.1.5 Top plates.**~~

~~**R4409.5.1.5.1** The top plate of stud bearing walls shall be doubled and lapped at each intersection of walls and partitions.~~

~~**R4409.5.1.5.2** Joints shall be lapped not less than 4 feet (1219 mm).~~

~~**R4409.5.1.6 Corners.** Corners of stud walls and partitions shall be framed solid by not less than three studs.~~

~~**R4409.5.1.7 Splicing.** Studs, other than end-jointed lumber, shall be spliced only at points where lateral support is provided.~~

~~**R4409.5.1.8 Framing types.**~~

~~**R4409.5.1.8.1** Wood framing may be any one, or a combination of, the following types: Platform, balloon, plank and beam or pole type.~~

~~**R4409.5.1.8.2** Exterior stud walls of two-story buildings shall be balloon-framed with studs continuous from foundation to second floor ceiling and with second floor joists supported as indicated in Section R4409.6.3.3. Gable end walls in wood frame buildings shall be balloon framed with studs continuous from foundation to roof.~~

~~**Exception:** Platform framing is allowed in buildings over one story in height provided an additional mandatory inspection for floor level connectors is made before the framing/firestopping inspection. Gable end walls shall be balloon framed with studs continuous from top floor to roof.~~

~~**R4409.5.1.9 Notching.**~~

~~**R4409.5.1.9.1** Studs that carry loads in excess of 75 percent of their capacity shall not be notched or cut.~~

~~**R4409.5.1.9.2** Studs that carry loads 75 percent or less of their capacity may be notched to one-third of the depth without limit of the number of consecutive studs.~~

~~**R4409.5.1.10 Pipes in walls.**~~

~~**R4409.5.1.10.1** Stud walls and partitions containing pipes shall be framed to give proper clearance for the piping.~~

~~**R4409.5.1.10.2** Where walls and partitions containing piping are parallel to floor joists, the joists shall be doubled and may be spaced to allow vertical passage of pipes.~~

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R4409.5.1.10.3 Where vertical pipe positions necessitate the cutting of plates, a metal tie not less than 1inch by 1/8 inch (25 mm by 3 mm) shall be placed on each side of the plate across the opening and nailed with not less than two 16d or three 8d nails at each end.

R4409.5.1.11 Headers.

R4409.5.11.1 All headers in bearing walls shall be designed by rational analysis.

R4409.5.1.11.2 Headers or lintels over stud wall openings shall have not less than nominal 2-inch (51 mm) bearings.

R4409.5.1.12 Studs joining masonry or reinforced concrete walls. Where stud walls or partitions join masonry or concrete walls, such studs shall be secured against lateral movement by bolting to the masonry or concrete with 1/2 inch (13 mm) diameter anchor bolts with oversized washer spaced not more than 4 feet (1219 mm) apart and embedded not less than 5 inches (127 mm) into a grout filled cell or into concrete or as designed by a registered licensed engineer or registered architect proficient in structural design using rational analysis.

R4409.5.1.13 Wind bracing. Exterior stud walls shall be effectively wind braced in accordance with Section R4409.9.3. Such bracing shall be designed by a registered licensed engineer or registered architect proficient in structural design.

R4409.5.1.14 The intermixing of wall framing described in this section with other types of structural wall systems as provided in this code shall not be permitted unless such wall framing and connections are designed by a registered professional engineer or registered architect proficient in structural design.

R4409.5.3 Columns and posts.

R4409.5.3.1 Columns and posts shall be framed to true end bearing, shall be securely anchored against lateral and vertical forces, and shall be designed by a registered professional engineer or registered architect proficient in structural design.

R4409.5.3.2 The bottom of columns and posts shall be protected against deterioration by an approved product or method.

R4409.5.3.3 Columns and posts shall be spliced only in regions where lateral support is adequately provided about both axes and is designed by rational analysis. Such design shall be prepared, signed and sealed by a registered professional engineer or registered architect proficient in structural design.

R4409.5.3.4 Design dimensions of columns and posts shall not be reduced by notching, cutting or boring.

SECTION R4409.6
HIGH-VELOCITY HURRICANE ZONES — HORIZONTAL FRAMING

R4409.6.1 Size.

R4409.6.1.1 The minimum size of joists and rafters shall be as set forth in Section R4409.4.

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~~**R4409.6.1.2** The design of horizontal framing other than joists and rafters shall be as set forth in Section R4409.4.1.1.~~

~~**R4409.6.3 Bearing.**~~

~~**R4409.6.3.1** Joists and rafters shall have not less than three inches of bearing, on wood, metal, grout filled masonry or concrete except as provided in Sections R4409.6.3.2, R4409.6.3.3 and R4409.6.3.4.~~

~~**R4409.6.3.2 Masonry and concrete.**~~

~~**R4409.6.3.2.1** Joists and rafters may bear on and be anchored by steel strap anchor embedded into a grout filled cell of the masonry or reinforced concrete, as described in Section R4409.8.5.1, to a wood plate provided such wood plate is of an approved durable species or pressure treated with an approved preservative and such plate shall be not less than 2x4 and attached as per Section R4409.5.1.4.1. The net uplift on the plate shall be limited to 300 pounds per foot (4378 N/m).~~

~~**R4409.6.3.2.2** Joists and rafters may bear on a product control approved channel shaped metal saddle and fastened to the masonry by a steel strap anchor embedded into a grout filled cell of the masonry or concrete.~~

~~**R4409.6.3.2.3** Joists and rafters may bear on masonry, provided that each joist or rafter in contact with masonry is of an approved durable species or pressure treated with an approved preservative and anchored as in Section R4409.6.3.2.2 above.~~

~~**R4409.6.3.3** Floor joists may butt into a header beam if effectively toenailed and if an approved metal hanger providing not less than 3 inches (76 mm) of bearing transmits the vertical load to the top of the header, provided, however, that approved devices or other approved means of support may be used in lieu of such bearing. All hangers and devices shall have Product Approval.~~

~~**R4409.6.3.4** Ceiling joists may butt into a header beam, as set forth for floor joists, or approved devices or other approved means of support may be used in lieu of such bearing. All devices shall have Product Approval.~~

~~**R4409.6.3.5** In lieu of the above, bearing and anchorage may be designed by rational analysis by a registered professional engineer or registered architect proficient in structural design.~~

~~**R4409.6.4 Splicing.** Horizontal members shall not be spliced between supports except that properly designed splices or approved end jointed lumber may be used.~~

~~**R4409.6.5 Notching and boring.**~~

~~**R4409.6.5.1** Unless local unit stresses are calculated on the basis of reduced size, wood members in bending shall not be cut, notched or bored except as provided in Sections R4409.6.5.1.1 and R4409.6.5.1.2.~~

~~**R4409.6.5.1.1** Notches may be cut in the top or bottom not deeper than one-sixth of the depth not longer than one-third of the depth of the member and shall not be located in the middle one-~~

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third of the span. Where members are notched at the ends, over bearing points, the notch depth shall not exceed one fourth the member depth.

R4409.6.5.1.2 Holes may be bored in the middle one-third of the depth and length and not larger than one sixth of the depth. Space between any two holes in the same joist shall be not less than the depth of the joist.

R4409.6.5.2 Where necessary to run service pipes in the space between the ceiling and floor larger than can be accommodated by the above provision, such ceilings shall be furred or provision made for headers or beams and/or for changing direction of the joists where the design permits.

R4409.6.6 Openings.

R4409.6.6.1 Joists shall be doubled adjacent to openings where more than one joist is cut out or shall be so increased in size or number as may be needed to meet the stress requirements.

R4409.6.6.2 Headers shall be of the same size as the joists and where supporting more than one joist shall be double members.

R4409.6.6.3 Headers shall be supported by approved metal hangers or ledgers or other approved members.

R4409.6.7 Wood entering masonry or reinforced concrete.

R4409.6.7.1 Wood joists, beams or girders which frame into masonry or reinforced concrete shall have a minimum of 1/2 inch (13 mm) air space at the top, end and sides or shall be preservative pressure treated or of an approved durable species.

R4409.6.7.2 Where masonry extends above such wood members, joists shall be fire-cut so the top edge does not enter the masonry more than 1 inch (25 mm) or shall be provided with wall plate boxes of self-releasing type or approved hangers.

R4409.6.9 Ceiling joists.

R4409.6.9.1 In buildings with pitched roofs the ceiling joists, where practicable, shall be nailed to the rafters and shall be designed to carry all imposed loads including but not limited to lateral thrust.

R4409.6.9.2 Ceiling joists spanning more than 10 feet (3 m) shall be laterally supported at mid-span.

R4409.6.9.3 Ceiling joists shall not be used to support rafter loads unless the joists and connections are properly designed for the total load being imposed.

R4409.6.10 Roof framing. The permit documents shall include roof framing plans showing spacing and spans of all roof members indicating any fabricated elements to be designed and furnished by others and shall include the details for support and bearing of the roof structural system, for the permanent cross/lateral/diagonal bracing and anchorage required to resist dead, live and wind loads as set forth in Section R4403.9. The framing plans shall also indicate the uplift forces applied on the roof, sheathing type, thickness and nailing requirements for the

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~~sheathing. The roof framing plans shall be prepared by and bear the sign and seal of, a registered professional engineer or registered architect of record proficient in structural design.~~

~~**R4409.6.11 Roof joists.** Roof joists may cantilever over exterior walls as limited by the allowable stress, but the length of such cantilever shall not exceed half the length of the portion of the joist inside the building; and where the cantilever of tail joists exceeds 3 feet (914 mm), the roof joist acting as a header shall be doubled.~~

~~**R4409.6.12 Roof rafters.**~~

~~**R4409.6.12.1** Hip rafters, valley rafters and ridge boards shall be provided and shall be not less in size than the largest rafter framing thereto nor less than required to support the loads.~~

~~**R4409.6.12.2 Collar ties.**~~

~~**R4409.6.12.2.1** Collar ties and their connections shall be provided to resist the thrust of rafters and shall be designed by a registered engineer or registered architect proficient in structural design.~~

~~**R4409.6.12.2.2** Collar ties shall not be required if the ridge is designed as a supporting beam. Such design shall be done by a registered licensed engineer or registered architect proficient in structural design.~~

~~**R4409.6.12.2.3** Ceiling joists may serve as collar ties when properly designed by a registered professional engineer or registered architect proficient in structural design.~~

~~**R4409.6.12.3** The actual roof and ceiling dead loads may be used to resist uplift loads, but the maximum combined dead load used to resist uplift loads shall not exceed 10) pounds per square foot (479 Pa).~~

~~**R4409.6.13 Heavy timber construction.** Heavy timber construction of floors or roofs shall comply with the standards in Section R4409.1.4. All heavy timber construction shall be designed by a registered professional engineer or registered architect proficient in structural design to withstand the loads required in Section R4403.~~

~~**R4409.6.14 Vertically laminated beams.** Vertically laminated built-up beams shall be designed and made up of members continuous from bearing to bearing.~~

~~**R4409.6.15 Glued laminated members.** Glued laminated members shall be designed to comply with applicable AITC standards adopted by this code.~~

~~R4409.6.17 Wood trusses.~~

~~**R4409.6.17.1 Trussed rafters.** Trussed rafters shall be designed by methods admitting of rational analysis by a registered professional engineer or registered architect proficient in structural design based on the standards set forth in Section R4409.1.4.~~

~~**R4409.6.17.1.1** Where steel is used for connecting wood members, such connectors shall be not less than 20 U.S. gauge and shall be protected with a zinc coating conforming to the ASTM A361 Standard set forth in Chapter 43 of this code. Connectors shall have Product Approval or~~

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~~shall be designed by methods admitting of rational analysis by a registered professional engineer or registered architect proficient in structural design.~~

~~R4409.6.17.1.2~~ ~~Where a ceiling is to be attached directly to the underside of trusses, the trusses shall be laterally braced with continuous 1x4 members nailed with 8d common nails to the upper side of the bottom chord at panel points but not to exceed 10 feet (3 m) apart. This lateral bracing shall be restrained at each end and at 20 foot (6 m) intervals. Drywall may be considered a rigid ceiling in enclosed areas where it is protected from the elements. The drywall ceiling is not to be considered a ceiling diaphragm.~~

~~R4409.6.17.1.3~~ ~~Where a ceiling is to be attached to wood stripping which is nailed to the underside of the bottom chord of trusses with two 8d common nails at each intersection, stripping shall be not less than 1x3 spaced not more than 24 inches (610 mm) apart. Wood stripping may be replaced by furring channels. Furring channels shall be a minimum of 7/8 inch (22 mm) hat shaped channels weighing 287 pounds per 1000 lineal foot (41.4 kg per 100 m) with minimum based steel of 0.0179 inch (0.445 mm) and complying with ASTM C 645 attached to trusses with minimum two #6 11/4 inch (32 mm) screws per intersection. Said stripping or metal furring channels may serve also as the lateral bracing of the truss bottom chord so as to minimize the effects of buckling of the bottom chord when subjected to compressive stresses under reverse load conditions. In addition, the rigid ceiling that is created by this 1x3 stripping or metal furring channels must also be restrained from lateral movements, in accordance with the details provided by the architect or licensed engineer of record.~~

~~Exception:~~ ~~Where fire-rated design assembly does not allow for this specific installation, see Section R4409.6.17.1.2~~

~~R4409.6.17.1.4~~ ~~Where a ceiling is attached to wood members suspended beneath trusses, the provisions of Section R4409.6.1 shall apply.~~

~~R4409.6.17.2 Prefabricated wood trusses.~~ ~~Prefabricated wood trusses shall comply with this section.~~

~~R4409.6.17.2.1 Design.~~

~~R4409.6.17.2.1.1~~ ~~Prefabricated wood trusses shall be designed by a registered professional engineer (delegated engineer) and fabricated in accordance with the National Design Standard for Metal Plate Connected Wood Truss Construction of the Truss Plate Institute (TPI). The truss system designer (delegated engineer) shall prepare the truss system shop drawings. Such shop drawings shall be submitted to the building official for review and approval. The shop drawings shall meet the following requirements:~~

~~1. All shop drawings shall be in conformity with the architect or engineer of record framing plans unless prior written approval is obtained from the architect or engineer of record. If reframing is approved, the architect or engineer of record shall resubmit revised framing plans to the building official after receiving updated plans from the delegated engineer showing all adjustments necessary to safely transmit all applied loads to the foundation.~~

~~2. Permanent bracing of individual truss members may be required on certain members of the trusses to prevent the members from buckling in the plane normal to the trusses (buckling in the narrow direction). This bracing shall be designed for both upward and downward loads and shall be shown on the individual truss drawings [truss engineering usually shown on 81/2-inches~~

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~~by 11-inch (216 mm by 279 mm) sheets ("A" size drawings)]. The design of this bracing shall be the responsibility of the delegated engineer. The contractor shall be responsible for seeing that this bracing is properly installed. This bracing may be in the form of (but not limited) to "T" bracing of an individual member, or lateral bracing of a series of members common to a number of trusses. Where lateral bracing is used, this bracing shall be restrained against lateral movement, in accordance with details provided by the delegated engineer or by the architect or professional engineer of record. All details and sections required to show the size and connections of all secondary members will be supplied on the delegated engineering plans and shall show all framing, connections and bracing on one or more primary plans of minimum size 24 inches by 36 inches (610mm by 914 mm).~~

~~3. A size 81/2-inches by 11-inches (216 mm by 279 mm) cut sheets showing individual member design shall also be furnished to the architect or engineer of record so that all gravity and uplift loads shown on these cut sheets can be transferred to the primary plans.~~

~~4. The size and location of all plates at each joint shall be shown on the truss design drawings.~~

~~5. The connection between trusses shall be detailed in the shop drawings. Hip sets shall be detailed in a manner to indicate all connections according to engineering drawings for the attachment of skewed members.~~

~~6. Truss design drawings shall indicate the support and minimum bearing of the roof structural system, the permanent cross/lateral bracing, bracing to transfer member buckling forces to the structure and all bracing and anchorage required to resist uplift and lateral forces.~~

~~7. Flat and floor trusses must be clearly marked so that they will be installed right side up. These marks must remain after the flooring, sheathing and insulation have been installed.~~

~~The intent of the above requirements is to provide all information on framing, connections and bracing on one composite set of plans approved by the architect or engineer of record to aid in the review, approval and field inspections for the portion of the property.~~

~~**R4409.6.17.2.1.2** Trusses shall be designed for wind loads per Section R4403, uniformly distributed live, dead and concentrated loads, and such loads shall be indicated on the roof framing plans and the truss design drawings. Where a girder or truss is subjected to concentrated loads or any unusual loading condition, such conditions must be clearly indicated on the roof framing plans and on the truss design drawings. Where truss members have been cut, shifted or altered in any manner to meet construction needs or for any other reason, additional drawings and additional calculations must be prepared, signed and sealed by the truss designer (a Florida-delegated engineer). Such additional drawings and calculations must be approved by the engineer or architect of record and must be submitted to the building official for review and approval.~~

~~**R4409.6.17.2.1.3** Roof trusses shall be designed for a minimum live load of 30 psf (1436 Pa), a minimum dead load of 15 psf (718 Pa) on the top chord, and a minimum dead load of 10 psf (479 Pa) on the bottom chord; and wind loads per Section R4409 of this code. Where the roof design is such that water is not directed to the interior of the roof and there are no parapets or other roof edge drainage obstructions, roof trusses with slopes of 11/2:12 or greater may be designed for a live load of 20 psf (958 Pa) and a minimum total load of 45 psf (2155 Pa). Adjustment of the allowable design stress for load duration shall be in accordance with National~~

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Design Specification for Wood Construction except that load duration factor for wind loads shall not exceed 1.33.

R4409.6.17.2.1.4 The allowable deflection under live load for trusses shall not exceed span/360 for plastered ceilings, span/240 for unplastered finished ceilings, or span/180 for trusses without a ceiling.

R4409.6.17.2.1.5 Flat roof trusses shall be designed for not less than the loads set forth in Section R4409.6.17.2.1.3 above, except that the dead load on the top chord may be taken as 10 psf (479 Pa) in lieu of 15 psf (718 Pa), and the total load reduced to 50 psf (2394 Pa). Adjustment of the allowable design stress for load duration shall be in accordance with National Design Specification for Wood Construction except that load duration factor for wind loads shall not exceed 1.33.

R4409.6.17.2.1.6 Where gable end trusses are permitted in this code, they shall be designed for a minimum live load of 30 psf (1436 Pa) and a minimum dead load of 15 psf (718 Pa) on the top chord. The minimum load of 10 psf (479 Pa) on the bottom chord may be omitted where continuous support is provided. In addition, the gable end trusses shall be designed to sustain wind load as specified in Section R4403 but not less than 30 psf (1436 Pa) perpendicular to the plane of the truss. Such trusses shall use a rationally designed system to resist lateral wind loads and be anchored to the substructure at intervals no greater than 4 feet (1219 mm) on center to resist the uplift forces and shall be designed to transfer the loads to the substructure. The design of the system used to resist the lateral loads imposed on the truss shall be prepared by the engineer or architect of record.

R4409.6.17.2.1.7 When girders exceed two members and when girder reactions exceed the capacity of standard connectors or hangers, these reactions shall be shown on the drawings and the connection must be designed, signed and sealed by a registered professional engineer or registered architect proficient in structural design and such design shall be included as part of the shop drawings.

R4409.6.17.2.1.8 All trusses shall be properly braced to act as a system. Such bracing shall be included as part of the design document.

R4409.6.17.2.2 Materials and specifications.

R4409.6.17.2.2.1 Trusses shall be fabricated applying the design values listed in the standard Design Values for Wood Construction of the American Forest and Paper Association.

R4409.6.17.2.2.2 Top and bottom chords shall be of No. 2 grade or better. Web members shall be of No. 3 grade or better. A chord member is defined as the entire top or bottom truss member which may consist of shorter spliced pieces.

R4409.6.17.2.2.3 For trusses spanning 20 feet (6 m) or less, the minimum percentage of grade-marked members among top and bottom chords shall be 50 percent.

R4409.6.17.2.2.4 For trusses spanning more than 20 feet (6 m) the minimum percentage of grade-marked percent, and there shall be a minimum of one marked members among top and bottom chords shall be 75 web on each truss.

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R4409.6.17.2.2.5 All lumber shall be 2x4 nominal or larger, and no 2-inch (51 mm) nominal member shall be less in size than 11/2 inch (38 mm).

R4409.6.17.2.2.6 The moisture content of all lumber used in wood truss fabrication shall not exceed 19 percent.

R4409.6.17.2.2.7 Connector plates shall be not less than 20 gauge galvanized steel meeting ASTM A 653/A 653M or A 924/A 924M, and shall be identified by the manufacturer's stamp. The size and location of all plates shall be shown on the truss design drawings. Connectors shall have Product Approval.

R4409.6.17.2.2.8 All connector plates over 3 inches (76 mm) and 25 percent of 3 inch (76 mm) or less, as per TPI standards, shall bear the name, logo or other markings, which clearly identify the manufacturer. Semiannually, plate manufacturers shall certify compliance with the provisions of Section 6 of the Truss Plate Institute, TPI-95 or latest edition, National Design Standard for Metal Plate Connected Wood Truss Construction , with respect to the grade of steel, thickness or gauge of material, and galvanizing to ASTM G 60 as a minimum. This certification requirement shall be satisfied by submitting by an approved independent laboratory to the product control division.

R4409.6.17.2.3 Fabrication.

R4409.6.17.2.3.1 Manufacturers of prefabricated wood truss assemblies shall obtain a valid certificate of competency from the authority having jurisdiction.

R4409.6.17.2.3.2 Each truss shall bear the fabricators stamp on a web member and 75 percent shall be placed so as to be clearly visible after erection and before placement of ceiling.

R4409.6.17.2.3.3 Multiple member girder trusses shall be predrilled at the truss plant for connection bolts only. Hanger bolt holes shall be drilled on site on location indicated on approved drawings.

R4409.6.17.2.3.4 Each manufacturer or fabricator shall retain the services of applicable organizations among those listed below for monthly inspections of the lumber grade used in fabrication. Following each inspection, a report shall be submitted by the inspection agency to the authority having jurisdiction. All inspection agencies providing any type of inspection services shall be approved by the authority having jurisdiction.

For Pine:

Southern Pine Inspection Bureau or Timber Products Inspection Inc. or other grading agencies with appropriate jurisdiction.

For Douglas Fir, Hem Fir or Fir Larch:

Western Wood Products Association or West Coast Lumber Inspection Bureau. Timber Products Inspection Inc. or other grading agencies with appropriate jurisdiction.

R4409.6.17.2.3.5 In addition, the fabricator shall employ an approved testing laboratory to conduct inspections of fabrication compliance. Such inspections shall be made unannounced and at random at least once a month. Following each inspection, a report on approved forms

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~~shall be submitted by the laboratory to the authority having jurisdiction and such reports shall bear the date, signature and seal of the supervising Florida registered architect or professional engineer.~~

~~**R4409.6.17.2.3.6** When there is evidence of noncompliance with the provisions for fabrication set forth in this paragraph or with the approved plans, the authority having jurisdiction may require the inspection laboratory to make additional jobsite or plant inspections.~~

~~**R4409.6.17.2.3.7** The authority having jurisdiction may require load testing on noncomplying wood trusses. The test results shall be reported to the authority having jurisdiction.~~

~~**R4409.6.17.2.3.8** Failure of units tested or receipt of inspection reports indicating fabrication not in accordance with approved truss design drawings, or failure to submit required inspection and/or test reports, shall be cause for suspension or revocation of the certificate of competency of the manufacturer or fabricator.~~

~~**R4409.6.17.2.4.4** At gable ends, this diaphragm shall be designed to transmit lateral loads imposed on the gable to roof diaphragms and/or ceiling diaphragms where available. Where the wall supporting the gable is not designed to withstand lateral loads independent of the gable (by using shear walls or other methods), anchorage of the gable to the wall shall be designed to transmit the loads from the wall to the bracing and the bracing designed to transmit the lateral loads from the gable and wall to the roof diaphragms and/or ceiling diaphragms where available. Ceiling diaphragms that provide lateral support at gable walls shall be designed by the architect or professional engineer of record, and shall have continuous bottom chord bracing, end restraints, intermediate restraints and conditions so as to sufficiently transfer the lateral loads at the top of the gable end walls to the intersecting shear walls. In no case shall the rigid ceiling as defined in Section R4409.6.17.1.2 be used as an integral part of the system needed for lateral bracing of the gable end walls.~~

~~**SECTION R4409.8**~~
~~**HIGH-VELOCITY HURRICANE ZONES — ANCHORAGE**~~

~~**R4409.8.1** Anchorage shall be continuous from the foundation to the roof and shall satisfy the uplift requirements of Section R4403.9.~~

~~**R4409.8.2 Joists.**~~

~~**R4409.8.2.1** Fire-cuts into a masonry wall shall be anchored to the concrete beam on which they bear.~~

~~**R4409.8.2.2** Such anchors shall be spaced not more than 4 feet (1219 mm) apart and shall be placed at opposite ends across the building on the same run of joists.~~

~~**R4409.8.3** Joists shall be nailed to bearing plates, where such plates occur, to each other where continuous at a lap and to the studs where such studs are contiguous; and ceiling joists shall be nailed to roof rafters where contiguous.~~

~~**R4409.8.4** Every roof rafter and/or roof joist shall be anchored to the beam or studs on which they bear, and roof rafters opposing at a ridge shall be anchored across the ridge as set forth in Section R4409.8.6.~~

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R4409.8.5 Anchorage to concrete.

R4409.8.5.1 Anchorage designed to resist uplift forces, securing wood to concrete shall be steel straps embedded in the concrete minimum of 4 inches (102 mm) with hooking devices to top steel of tie beam designed to withstand the uplift forces set forth by the design professional. Straps shall be an approved product. All anchors and related fasteners shall be galvanized.

R4409.8.5.2 As an alternate to using the straps described in this section, the building official may approve other anchorage submitted by a Florida registered professional engineer or a Florida registered architect, proficient in structural design, provided that the information set forth in Section R4409.8.7(1), (2) and (3) submitted in connection with such anchors and such anchors and the proposed assembly otherwise comply with the requirements of this code.

R4409.8.6 Anchorage to wood.

R4409.8.6.1 Anchorage designed to resist uplift forces, securing wood to wood shall be steel straps nailed to each member and shall be designed to resist uplift forces set forth by the design professional. Straps shall be an approved product. All anchors and relative nails shall be galvanized.

R4409.8.6.2 As an alternate to using straps described in this section, the building official may approve other anchorage submitted by a Florida-registered architect or a Florida registered professional engineer, proficient in structural design, provided that the information set forth in Sections R4409.8.7(1), (2) and (3) submitted in connection with such anchors and such anchors and the proposed assembly otherwise comply with the requirements of this code.

R4409.8.7 Testing of anchoring. Anchoring required by R4409.8. and R4409.8.6 shall be tested under the following criteria:

1. Concrete to wood straps: Minimum design uplift load 700 pounds (3114 N), with 4 16d nails with upper end bent over truss chord and nailed. Nails shall be clinched. Anchors shall have devices to hook into upper tie beam steel and embedded a minimum of 4 inch (102 mm) in concrete.

2. Wood to wood straps: Minimum design uplift 700 lb (3114 N) with four 16d nails in each member.

3. Other anchors: Minimum design uplift 700 pounds (3114 N).

4. The criteria stated in Sections R4409.8.7(1), (2) and (3) above are minimum requirements for Product Approval. Anchor design and uplift forces shall be approved site for the inspector to.

SECTION R4409.9
HIGH-VELOCITY HURRICANE ZONES — SHEATHING

R4409.9.1 Floor sheathing.

R4409.9.1.3 Square-edged or spaced subflooring may be used only under a finish floor having a strength equal to or greater than 1/2 inch (12.7 mm) tongue-and-groove wood strip flooring;

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and under finish floors of less strength, a tongue-and-groove or plywood subfloor shall be required.

R4409.9.1.4 Lumber subflooring shall be not less than 5/8-inch (17 mm) thick when joists are spaced no more than 16 inches (406 mm) on center nor less than 3/4 inch (19 mm) thick when joists are spaced no more than 24 inches (610 mm) on center. End joints shall be on joists, joints shall be staggered and parallel to the joists, and ends at walls and similar places shall be supported by a ribbon or by blocking.

R4409.9.1.5 Plywood subfloors of C-D grade or Underlayment grade bonded to wood joist using adhesives meeting the requirements of ASTM D 3498 shall be applied as indicated in Section R4409.9.1.6.

R4409.9.1.6 Plywood subflooring shall be continuous over two or more spans with face grain perpendicular to the supports. The allowable spans shall not exceed those set forth in Table R4409.9.1.6.

TABLE R4409.9.1.6
PLYWOOD SUBFLOOR1

PANEL SPAN RATING[2]	**MAXIMUM PLYWOOD SPAN (IN.)[3]**
32/16	16
40/20	20
48/24	24

For SI: 1 inch = 25.4 mm.

Notes:

1. These values apply for Sheathing C-D and C-C grades only. Spans shall be limited to values shown, and reduced for the possible effects of concentrated loads.
2. Span Ratings shall appear on all panels.
3. Plywood edges shall have approved tongue-and-groove joints or shall be supported with blocking unless 1/4 inch minimum thickness underlay is installed or 1/2 inch of approved cellular or lightweight concrete is installed or unless finish floor is 1 inch nominal woodstrip. Allowable uniform load based on deflection of 1/360 of span is 100 pounds per square foot.
4. May be 24 inches if nominal 1-inch wood strip finish floor is laid at right angles to joists.

R4409.9.1.6.1 Plywood panels shall be nailed to supports with 6d common nails when up to 1/2 inch (13 mm) thick, 8d common nails when 19/32 to 3/4 inch (15 to 19 mm) thick and 10d common nails or 8d ring shank when 11/8 inches (29 mm) thick.

R4409.9.1.6.2 Nail spacing shall be 6 inches (152 mm) o.c. at panel edges and 10 inches (254 mm) o.c. at intermediate supports

R4409.9.1.8 Flooring shall be nailed with 8d common nails up to 3/4 inch (19 mm) thick, and 10d common nails or 8d ring shank nails when greater than 3/4 inch (19 mm) thick up to 11/8 inches (29 mm) thick.

R4409.9.1.8.1 Nails shall be hand driven 8d common nails [(0.131 inch (3.3 mm) diameter by 21/2 (inches (63.5 mm) long with 0.281 inch (7.1 mm) diameter full round head)] or power driven 8d nails of the same dimensions (0.131 inch diameter by 21/2 inches long with 0.281 inch diameter full round head). Nails of a smaller diameter or length may be used only when

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approved by an architect or licensed engineer and only when the spacing is reduced accordingly.

R4409.9.1.8.2 Nails shall be hand driven 10d common nails (0.148 inch (3.8 mm) diameter by 3 inch (76 mm) long with 0.312 inch (7.9 mm) diameter full round head) or power driven 10d nails of the same dimensions (0.148 inch diameter by 3 inch long with 0.312 inch diameter full round head). Nails of a smaller diameter or length may be used only when approved by an architect or licensed engineer and only when the spacing is reduced accordingly.

R4409.9.1.9 Nail spacing shall be 6 inches (152 mm) on center at panel edges and 10 inches (254 mm) on center at intermediate supports.

R4409.9.1.10 Flooring shall be nailed with 8d common nails not less than two in each board at each support.

R4409.9.1.11 Floors for heavy timber buildings shall be sheathed as specified for mill floors in Section R4409.9.13.

R4409.9.1.12 Flooring shall not extend closer than 1/2 inch (12.7 mm) from masonry walls.

TABLE R4409.9.1.13
ALLOWABLE SPAN FOR PLYWOOD COMBINATION SUBFLOOR UNDERLAYMENT[1] (SINGLE FLOOR PANELS)

SPECIES GROUPS	MAXIMUM PLYWOOD SPAN (IN.)[2,3]			
	16[4]	20[4]	24	48
1	1/2"	5/8"	3/4"	
2,3	5/8"	3/4"	7/8"	
4	3/4"	7/8"	1"	
1,2 and 3				1 1/8"

For SI: 1 inch = 25.4 mm.

Notes:

1. Applicable underlayment grade, C-C (plugged) and all grades of sanded Exterior type plywood.
2. Spans shall be limited to values shown, and reduced for the possible effects of concentrated loads.
3. Allowable uniform load based on deflection of 1/360 of span is 100 pounds per square foot except that total load for 48" on center is 65 pounds per square foot. Plywood edges shall have approved tongue-and-groove joints or shall be supported with blocking unless 1/4 inch minimum thickness underlay is installed or 1/2 inch of approved cellular or lightweight concrete is placed over the subfloor and the sheathing is rated for Exposure 1.
4. If a wood finish floor is laid perpendicular to the joists or supports, thickness shown for 16-inch and 20-inch spans may be used for 24-inch spans.

R4409.9.1.16 Diaphragm boundaries. All floor sheathing acting as a diaphragm shall be attached to a minimum 2-inch (51 mm) thick nominal nailer with its depth equal to or one size greater than the intersecting top chord. The nailer shall be connected to the wall to resist the gravity loads from the floor, wind pressure/suction from the exterior wall and the diaphragm

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forces. The floor sheathing shall be attached to the nailer to resist the wind pressure/suction from the exterior wall and the diaphragm forces.

R4409.9.2 Roof sheathing.

R4409.9.2.1 Wood roof sheathing shall be boards or shall be plywood.

R4409.9.2.2 Board roof sheathing shall have a net thickness of not less than 3/4 inch (19 mm) when the span is not more than 28 inches (711 mm) or 5/8 inch (17 mm) when the span is not more than 24 inches (610 mm), shall have staggered joints and shall be nailed with 8d common nails not less than two in each 6 inch (152 mm) board nor three in each 8 inch (203 mm) board at each support.

R4409.9.2.3 Plywood roof sheathing shall be rated for Exposure 1, have a minimum nominal thickness of 19/32 inch (21 mm) and shall be continuous over two or more spans with face grain perpendicular to supports. Roof sheathing panels shall be provided with a minimum of 2x4 edgewise blocking at all horizontal panel joints with edge spacing in accordance with manufacturer's specifications, for a distance at least 4 feet (1219 mm) from each gable end. The allowable spans shall not exceed those set forth in Table R4409.9.2.3.

TABLE R4409.9.2.3
ALLOWABLE SPAN FOR PLYWOOD ROOF SHEATHING[1]

PANEL SPAN RATING[2]	MAXIMUM SPAN IF BLOCK OR OTHER EDGE SUPPORTS (IN.)	MAXIMUM SPAN WITHOUT EDGE SUPPORT (IN.)
32/16	24	24
40/20	40	32
48/24	48	36

For SI: 1 inch = 25.4 mm.
Notes:
1. Values apply to sheathing grade, C-C and C-D panels.
2. Span Rating appears on all C-C and C-D panels.

R4409.9.2.4 Plywood panels shall be nailed to supports with 8d ring shank nails.

R4409.9.2.5 Nail spacing shall be 6 inches (152 mm) on center at panel edges and at intermediate supports. Nail spacing shall be 4 inches (102 mm) on center at gable ends with either 8d ring shank nails or 10d common nails.

R4409.9.2.5.1 Nails shall be hand driven 8d ring shank or power driven 8d ring shank nails of the following minimum dimensions: (a) 0.113 inch (2.9 mm) nominal shank diameter, (b) ring diameter of 0.012 inch (0.3 mm) over shank diameter, (c) 16 to 20 rings per inch, (d) 0.280 inch (7.1 mm) full round head diameter, (e) 23/8 inch (60.3 mm) nail length. Nails of a smaller diameter or length may be used only when approved by an architect or licensed engineer and only when the spacing is reduced accordingly.

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~~**R4409.9.2.5.2** Nails at gable ends shall be hand driven 8d ring shank or power driven 8d ring shank nails of the following minimum dimensions: (a) 0.113 inch (2.9 mm) nominal shank diameter, (b) ring diameter of 0.012 inch (0.3 mm) over shank diameter, (c) 16 to 20 rings per inch, (d) 0.280 inch (7.1 mm) full round head diameter, (e) 23/8 inch (60.3 mm) nail length or as an alternative hand driven 10d common nails [(0.148 inch (3.8 mm) diameter by 3 inches (76 mm) long with 0.312 inch (7.9 mm) diameter full round head)] or power driven 10d nails of the same dimensions [0.148 inch (3.8 mm) diameter by 3 inches (76 mm) long with 0.312 inch (8 mm) diameter full round head]. Nails of a smaller diameter or length may be used only when approved by an architect or professional engineer and only when the spacing is reduced accordingly. Other products with unique fastening methods may be substituted for these nailing requirements as approved by the building official and verified by testing.~~

~~**R4409.9.2.5.3** Other products with unique fastening methods may be substituted for these nailing requirements as approved by the building official and verified by testing.~~

~~**R4409.9.2.6** Roof sheathing for heavy timber construction shall comply with Section R4409.6.13 of this code.~~

~~**R4409.9.2.7 Diaphragm boundaries.** All roof sheathing acting as a diaphragm shall be attached to a minimum 2-inch (51 mm) thick nominal member with its depth equal to or one size greater than the intersecting top chord. This shall be achieved with a continuous structural subfascia, fascia or blocking at 4 inches (102 mm) on center with nails as required for the appropriate thickness of sheathing.~~

~~**R4409.9.2.8** When existing roofs are reroofed to the point that the existing roofing is removed down to the sheathing, the existing roof sheathing shall be re-nailed with 8d common nails [(0.131 inch (3.3 mm) diameter by 21/2 inches (63.5 mm) long with 0.281 inch (7.9 mm) diameter full round head)]. Nail spacing shall be 6 inches (152 mm) on center at panel edges, 6 inches (152 mm) on center at intermediate supports and where applicable 4 inches (102 mm) on center over gable ends and subfascia. Existing fasteners may be used to achieve such minimum spacing.~~

~~**R4409.9.3 Storm sheathing.** Exterior stud walls shall be sheathed to resist the racking load of wind as set forth in Section R4403.9 and the concentrated loads that result from hurricane-generated wind-borne debris as set forth in Section R4403.16 of this code and shall be at a minimum any of the following types:~~

~~1. Tightly fitted, diagonally placed boards not less than 5/8 inch (17 mm) thickness, nailed with three 8d common nails to each support for 1 inch by 6 inch (25 mm by 152 mm) boards and four 8d common nails for 1 inch by 8 inch (25 mm by 203 mm) boards.~~

~~2. Wall sheathing shall be plywood, or Product Approved structural panel, rated Exposure 1 with a minimum thickness of 19/32 inch (15 mm) and shall be applied to studs spaced not more than 16 inches (406 mm) on center. Wall sheathing shall be continuous over three or more supports and shall be nailed to such supports with 8d common nails. Nail spacing shall not exceed 6 inches (152 mm) on center at panel edges and all intermediate supports. Nail spacing shall be 4 inches (102 mm) on center at corner studs, in all cases.~~

~~3. When plywood panel, or product approved structural panel, sheathing is used, building paper and diagonal wall bracing can be omitted.~~

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4. When siding such as shingles nailed only to plywood or product approved structural panel sheathing, the panel shall be applied with face grain across studs.

R4409.9.4 Exterior wall cladding.

R4409.9.4.1 Plywood, if protected with stucco, may serve for both sheathing and exterior cladding provided:

1. The panel thickness shall be not less than 19/32 inch (15 mm) and Texture 1-11 panels, and the supporting studs shall be spaced not more than 16 inches (406 mm) o.c.

2. All joints shall be backed solidly with 2-inch (51 mm) nominal blocking or studs or the joints shall be lapped horizontally or otherwise watertight.

3. Nailing shall be as set forth in Section 4409.9.3(2).

R4409.9.4.2 Where storm sheathing is provided in accordance with Section R4409.9.3, exterior cladding may be one of the following:

1. Wood siding shall be installed according to its Product Approval.

2. Wood shingles or shakes attached to the storm sheathing, and/or to nailing boards or shingle backer securely attached to the storm sheathing. The minimum thickness of wood shingles or shakes between nailing boards shall be 3/8 inch (9.5 mm).

3. Hardboard of siding quality for exterior use shall be applied in accordance with the Product Approval.

SECTION R4409.11
HIGH-VELOCITY HURRICANE ZONES — CONNECTORS

R4409.11.1 The allowable loads on all types of connectors shall be as set forth in the standards listed in Section R4409.1.4 and Table R4409.11.1.

R4409.11.2 Nails, bolts and other metal connectors that are used in locations exposed to the weather shall be galvanized or otherwise corrosion resistant.

R4409.11.3 In general, nails shall penetrate the second member a distance equal to the thickness of the member being nailed thereto. There shall be not less than two nails in any connection.

R4409.11.4 Except for wood-based structural-use panels and other laminated members manufactured under technical control and rigid inspection, gluing shall not be considered an acceptable connector in lieu of the connectors herein specified.

R4409.11.5 Safe loads and design practice for types of connectors not mentioned or fully covered herein shall be determined by the building official before approval.

SECTION R4409.12

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~~**HIGH-VELOCITY HURRICANE ZONES — WOOD SUPPORTING MASONRY**~~

~~**R4409.12.1** Wood shall not support masonry or concrete except as permitted in Sections R4409.12.2 and R4409.12.3.~~

~~**R4409.12.2** Wood foundation piles may be used to support concrete or masonry.~~

~~**SECTION R4409.13**~~
~~**HIGH-VELOCITY HURRICANE ZONES — PROTECTION OF WOOD**~~

~~**R4409.13.1** Wood piles shall be treated with preservatives as set forth in Section R4404.7.1.2.~~

~~**R4409.13.2 Preservative treated or durable species wood.**~~

~~**R4409.13.2.1** All wood used in areas of building or structures where the climatic condition is conducive to deterioration which would affect the structural safety shall be treated in an approved method with an approved preservative or shall be of an approved durable species.~~

~~**R4409.13.2.2** All wood in contact with or embedded in the ground that supports of permanent structures shall be approved pressure treated wood suitable for ground contact use.~~

~~**Exceptions:**~~

~~1. Naturally durable wood or pressure-treated wood may be used in contact with the ground for support of structures other than buildings and walking surfaces.~~

~~2. Untreated wood may be used for supports where entirely below water level and continuously submerged in fresh water.~~

~~**R4409.13.2.3** Sleepers and sills on concrete slabs in contact with the ground, wood joists and the underside of wood structural floors without joists less than 18 inches (457 mm) above ground; or wood girders less than 12 inches (305 mm) from exposed ground within the crawl space under buildings, shall be treated in an approved method with an approved preservative, or shall be of an approved durable species.~~

~~**R4409.13.2.4** All wood not separated from and/or in direct contact with concrete masonry, including sills, sleepers, plates, posts, columns, beams, girders and furring; shall be treated in an approved method with and approved preservative, or shall be of an approved durable species.~~

~~**R4409.13.2.5** The expression "pressure treated wood" refers to wood meeting the retention, penetration and other requirements applicable to the species, product, treatment and conditions of use in the approved standards of the American Wood Preservers Association (AWPA) and Quality Control Program for Softwood Lumber, Timber and Plywood Pressure Treated with Water-borne Preservatives for Ground Contact Use in Residential and Light Commercial Foundations for the American Wood Preservers Bureau.~~

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R4409.13.2.6 The expression "durable wood" refers to the heartwood of the following species with the exception that an occasional piece with corner sapwood may be included if 90 percent or more of the width of each side on which it occurs is heartwood:

Decay resistant: Redwood, Cedars, Black Locust.
Termite Resistant: Redwood, Bald and Eastern Red Cedar.

R4409.13.2.7 Where durable species of wood are used as structural members in buildings and structures, the stress grade shall be not less than that required in Section R4409.4.

R4409.13.2.8 When wood pressure treated with a water borne preservative is used in enclosed locations where drying in service cannot readily occur, such wood shall have a moisture content of 19 percent or less before being covered with insulation, interior wall finish, floor covering or other material.

R4409.13.2.9 All wood framing less than 8 inches (203 mm) from exposed earth in exterior walls that rest on concrete or masonry foundations shall be approved naturally durable species or pressure-treated wood.

R4409.13.2.10 All posts, poles and columns embedded in concrete which is in contact with ground and supporting permanent structures shall be approved pressure treated wood suitable for ground contact use except naturally durable wood may be used for posts, poles and columns embedded in concrete for structures other than buildings and walking surfaces or in structures where wood is above ground level and not exposed to the weather.

R4409.13.2.11 For conditions not specifically covered, compliance with American Forest & Paper Product Association Wood Construction Data #6, Design of Wood Frame Structures for Permanence, shall be deemed as compliance with this code.

R4409.13.3 Ventilation.

R4409.13.3.1 Ventilation of crawl spaces. Crawl spaces under buildings without basements shall be ventilated by approved mechanical means or by openings in foundation walls. Ventilation openings shall be covered with a corrosion resistant wire mesh with openings not greater than 1/16 inch (1.6 mm).

R4409.13.3.1.1 Where practicable, ventilating openings shall be arranged on three sides.

R4409.13.3.1.2 The minimum total area of ventilating openings shall be 2 square feet (0.19 m2) for each 15 linear feet (4.6 m) or a fraction thereof of exterior wall. Such opening need not be placed in the front of the building. Where mechanical ventilation is used, the ventilation rate shall be at least six air changes per hour.

R4409.13.3.2 Ventilation of attic spaces. Attic space between ceiling joists and roof rafters shall be effectively cross ventilated by approved mechanical means or with vent openings. The ratio of total net free ventilating area to the area of the ceiling shall be not less than 1/150.

Exception: The venting ratio may be reduced to 1/300 where at least 50 percent of the installed ventilating area is provided by a ventilation system located in the upper portion of the space to be ventilated [within 18 inches (457 mm) of ridge]. The balance of the required ventilation shall be provided by eave or cornice vents.

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R4409.13.3.2.1 Where practical, ventilating openings shall be arranged on three sides.

R4409.13.3.2.2 Where mechanical ventilation is used, the ventilation rate shall be at least six air changes per hour.

R4409.13.3.2.3 All openings into the attic space of any habitable building shall be covered with screening, hardware cloth or equivalent to prevent the entry of birds, squirrels, rodents, etc. The openings therein shall not exceed 1/8 inch (3.2 mm).

R4409.13.3.2.4 For existing structures that were built before 1992 without soffit ventilation, and where in the opinion of the building official the soffit ventilation would be impossible or impractical to install, the building official may determine the extent to which the existing structure shall be made to conform to the requirements of this section.

R4409.13.3.2.5 Unvented attic assemblies. Unvented attic assemblies shall be permitted if all the following conditions are met:

1. The unvented attic space is completely contained within the building thermal envelope.

2. No interior vapor retarder is installed on the ceiling side (attic floor) of the unvented attic assembly.

3. Where wood shingles or shakes are used, a minimum continuous ¼ inch (6 mm) vented air space separates the shingles or shakes from the roofing underlayment.

4. One of the following shall be met, depending on the air permeability of the insulation under the structural roof sheathing:

a. Air impermeable insulation only. Insulation shall be applied in direct contact to the underside of the structural roof sheathing.

b. Air permeable insulation only. In addition to air permeable insulation installed directly below the structural sheathing, at least R-5 rigid board or sheet insulation shall be installed directly above the structural roof sheathing for condensation control.

c. Air impermeable and air permeable insulation. At least R-5 air impermeable insulation shall be applied in direct contact to the underside of the structural roof sheathing for condensation control. The air permeable insulation shall be installed directly under the air impermeable insulation.

R4409.13.4 Debris.

R4409.13.4.3 Loose or casual wood shall not be stored in direct contact with the ground under any building, and this space must be thoroughly cleaned of all wood and debris.

TABLE R4409.13.1
NAIL CONNECTION FOR WOOD MEMBERS

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CONNECTION	COMMON NAILS	NUMBER OR SPACING
Joists to sill or girder, toe nail	16d	2
Bridging to joist, toe nail	8d	2 each end
1" x 6" subfloor or less to each joist, face nail	8d	2
Over 1" x 6" subfloor to each joist, face nail	8d	3 + 1 for each size increase
2" subfloor to joist or girder, blind and face nail	16d	2
Sole plate to joist or blocking, face nail	16d	16" o.c.
Top or sole plate to stud, end nailed	16d	2
Stud to sole plate, toe nail	3d	3 or 2 16d
Doubled studs, face nail	16d	24" o.c.
Doubled top plates, face nail	16d	16" o.c.
Top plates, laps and intersections, face nail	16d	2
Continuous header, two pieces	16 d	16" o.c. along each edge
Ceiling joists to plate, toe nail	16d	2
Continuous header to stud, toe nail	16d	3
Ceiling joists, laps over partitions, face nail	16d	3
Ceiling joists to parallel rafters, face nail	16d	3
Rafter plate, toe nail	16d	3
1" x 6" sheathing or less, to each bearing, face nail	8d	2
Over 1" x 6" sheathing, to each bearing, face nail	8d	3 + 1 for each size increase
Built-up corner studs, face nail	16d	30" o.c.
Built up girders and beams	20d	32" o.c. at top and bottom and staggered, 2 at ends and at each splice
2 inch planks	16d	2 each bearing

For SI: 1 inch = 25.4 mm.
Note: In spacing specifications, o.c. means "on center."

R4409.13.6.1 The building official shall inspect existing buildings having wood stud exterior walls for which application for a permit for exterior wall coverings is made and shall have the authority to order the uncovering of structural elements for inspection and to require necessary repairs as a part of such approval for a permit, or may order demolition.

SECTION R4409.15
HIGH-VELOCITY HURRICANE ZONES — WOOD FENCES

R4409.15.1 Wood fences, so located on a property that by zoning regulations they cannot be used as a wall of a building, shall be constructed to meet the minimum specifications in Sections R4409.15.2 and R4409.15.3.

R4409.15.2 Fences not exceeding 6 feet (1829 mm) in height, shall be constructed to meet the following minimum requirements: from nominal 4 x 4 x 8 feet (2438 mm) long posts No. 2 Grade or better spaced 4 feet (1219 mm) on center, and embedded 2 feet (610 mm) into a concrete footing 10 inches (254 mm) in diameter and 2 feet (610 mm) deep.

R4409.15.3 Fences not exceeding 5 feet (1524 mm) or 4 feet (1219 mm) in height shall be constructed as provided in Section R4409.15.2, except that the spacing of posts may be increased to 5 feet (1524 mm) and 6 feet (1829 mm) on center for these heights, respectively.

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SECTION R4409.17
HIGH-VELOCITY HURRICANE ZONES — WOOD BLOCKING

R4409.17.1 General.

R4409.17.1.1 Blocking is defined as wood pieces attached to the roof deck or to each other for the purpose of securing roof membrane or accessories.

R4409.17.1.2 Wood blocking attachment for buildings greater than 40 feet (12.2 m) in height must be designed by a registered architect or professional engineer.

R4409.17.1.3 Wood blocking attachment for lightweight insulating concrete, gypsum concrete, cementitious wood fiber and cellular concrete decks shall be designed by a registered architect or licensed engineer. The decks themselves shall not be used as a wood blocking attachment substrate.

R4409.17.1.4 Wood blocking shall not be less than nominal 2x6. The maximum unsupported overhang shall be 2 inches (51 mm). When the maximum overhang is employed, a nominal 2x8 blocking shall be installed.

R4409.17.1.5 In recover applications, wood blocking may be reduced to nominal 1 inch (25 mm), providing the attachment is secured in compliance with this code.

R4409.17.1.6 Sound wood blocking may be reused in a recover or reroof application, providing the attachment is secured in compliance with the requirements of this code.

R4409.17.1.7 A fastener shall be placed within 3 inches (761 mm) of the end of each section of wood blocking and a 1/4 inch (6 mm) gap shall be left between each section of wood blocking. No piece of wood shall have less than two fasteners.

R4409.17.1.8 Fasteners other than nails shall be predrilled prior to attachment and countersunk to be flush with the surface of the wood blocking.

R4409.17.1.9 Wood shall be protected according to Section R4409.13.

R4409.17.1.10 Powder actuated fasteners shall not be used in wood blocking attachment.

R4409.17.2 Attachment to masonry block and concrete.

R4409.17.2.1 Prior to the installation of wood blocking to standard weight masonry block, the two top courses shall be solidly filled with concrete or a tie beam shall be provided as required by this code.

R4409.17.2.2 The fastener's average withdrawal resistance per lineal foot shall be not less than 250 pounds per foot (3649 N/m) after the application of a 4:1 safety factor.

R4409.17.2.3 The pullover value of the proposed fastener though the wood blocking shall be not less than 125 percent of the design load of the proposed fastener. If less, a larger bearing washer shall be added to the fastener assembly to meet this requirement. Wood blocking thickness shall be not less than 11/2 inch (38 mm) if a bearing washer is required.

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Date Submitted	7/9/2012	**Section**	4410	**Proponent**	Michael Goolsby
Chapter	44	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	Yes				
Alternate Language	No				

Related Modifications

Summary of Modification

Eliminating unnecessary duplication of Chapter 44 HVHZ provisions

Rationale

Since the inception of the FBC, the content of Chapter 44 of the FBC, R has been a duplication of the sections contained in the FBC, Building volume. This proposed modification is intended to maintain the continuation of the current level of safety for the protection of life and property unchanged. Importantly, the proposed modification eliminates the need to unnecessarily duplicate more than one-hundred pages into the FBC, R volume, thereby reducing the size of the text contained in the FBC. Additionally, the proposed modification prevents the need to replace all of the non-wind related sections which were removed by legislative directive with dozens of individual modifications, each requiring review and approval; this process would otherwise be unavoidable in order to create a crucial integration of applicable and relevant building code sections into Chapter 44 requirements. In short, this proposed modification is a simplified approach resulting in identical code requirements but through a less time consuming, less complicated and less duplicative process.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to building and property owners relative to cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

It does so by ensuring direction to applicable sections of the code are provided.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

It does so by eliminating the need to unnecessarily duplicate building code provisions and affects a reduction in the number of code pages to be compiled, reviewed, edited and printed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification does not curtail the use of any material, products, methods or systems of construction already deemed acceptable by the Florida Building Code or any alternate materials, design and methods of construction and equipment acceptable to the code official.

Does not degrade the effectiveness of the code

This modification does not degrade the effectiveness of the code; instead, it maintains the applicability of relevant base code requirements as has been the case since the first edition of the Florida Building Code.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

General Comment - 08/09/2012 - 09/23/2012

S5017-G1

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:

Creates a reference to Chapter 24 of the FBC-B. The FBC-R was created to be a free standing document and as such should include the language if it meets the criteria for a Florida specific amendment.

General Comment - 08/09/2012 - 09/23/2012

S5017-G2

Proponent Jack Glenn **Submitted** 9/23/2012 **Attachments** No

Comment:
Creates a reference to Chapter 24 of the FBC-B. The FBC-R was created to be a free standing document and as such should include the language if it meets the criteria for a Florida specific amendment.

S5017 Text Modification

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SECTION R4410

HIGH-VELOCITY HURRICANE ZONES — GLASS AND GLAZING

R4410.1 ~~General~~ Refer to Chapter 24 of the Florida Building Code, Building.

~~**R4410.1.1** Exterior wall cladding, surfacing and glazing, where provided, shall be as set forth in Sections R4410 through R4415.~~

~~**R4410.1.2** Exterior wall cladding, surfacing and glazing shall be designed and constructed to sufficiently resist the full pressurization from the wind loads prescribed in Section R4403 and the concentrated loads that result from hurricane-generated wind-borne debris.~~

~~1. Exterior wall cladding, surfacing and glazing, within the lowest 30 feet (9.1 m) of the exterior building walls shall be of sufficient strength to resist large missile impacts as outlined in Section R4403.~~

~~2. Exterior wall cladding, surfacing and glazing located above the lowest 30 feet of the exterior building walls shall be of sufficient strength to resist small missile impacts as outlined in Section R4403.~~

~~**Exception:** Exterior wall cladding, surfacing and glazing when protected by fixed, operable or portable shutters or screens which have Product Approval to resist full pressurization from wind loads as well as large and small missile impacts as outlined in Section R4403, without deforming to the point where the substrate being protected is compromised.~~

~~**R4410.1.4** All exterior wall cladding, surfacing, garage doors, skylights, operative and inoperative windows shall have Product Approval.~~

~~**SECTION R4410.2**~~

~~**HIGH-VELOCITY HURRICANE ZONES — WINDOWS, DOORS, GLASS AND GLAZING**~~

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R4410.2.1 General.

R4410.2.1.1 Windows, doors, glass and glazing shall be as set forth in this section.

R4410.2.1.2 Glass shall comply with ASTM C 1036 requirements for flat glass Type I and II and GSA DD-G-451c Standard for Glass, Flat and Corrugated, for Glazing Mirrors and Other Uses .

R4410.2.1.7 Installed glass shall not be less than single strength B quality unless otherwise approved by the building official, and where edges are exposed they shall be seamed or ground.

R4410.2.1.8 Where a light of glass is of such height above grade that the top 50 percent or more is in a zone of greater wind load, the area of the entire light shall be limited as for the greater height above grade.

R4410.2.1.9 Replacement of any glazing or part thereof shall be designed and constructed in accordance with Florida Existing Building Code .

R4410.2.1.10 Replacement of glazing of more than one light or more than 30 percent of the total area glazed shall conform to the requirements of the section.

R4410.2.1.11 Fixed glazing used as an exterior component shall require Product Approval. Comparative analysis in compliance with R4410.2.3.2.6 by a Florida licensed engineer or architect may be accepted when the actual pressure and geometry conditions differ from the conditions shown in the approval.

R4410.2.2 Fixed glass in exterior walls.

R4410.2.2.1 Limits of size of glass.

R4410.2.2.1.1 The minimum thickness of annealed float glazing materials used in exterior walls shall be determined and shall not be less than as set forth in ASTM E 1300.

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R4410.2.2.1.2 For glazing materials other than annealed float, use the glazing material resistance factor used in ASTM E 1300.

R4410.2.2.1.3 Corrugated glass and other special glass shall be limited to spans determined by analysis and test to resist the loads set forth in Section R4403 based on fiber stresses not exceeding 4,000 psi (27.58 MPa).

R4410.2.2.1.4 Glass block shall have Product Approval.

R4410.2.3 Doors and operative windows in exterior walls.

R4410.2.3.1 Design and approval.

R4410.2.3.1.1 The design and approval of sliding doors, swinging doors and operative windows in exterior walls, including the supporting members shall be based on the proposed use height above grade in accordance with Section R4403 .

R4410.2.3.1.2 Maximum glass sizes shall comply with ASTM E 1300.

R4410.2.3.1.4 The architect or professional engineer of record shall be required to specify the design wind pressure, determined in accordance with Section R4403, for all garage doors, skylights operative windows and fixed glazing. The design wind pressure for each component of the exterior building surface, shall be incorporated into the building design drawing so as to allow the respective manufacturer to size the prefabricated assembly for the proper wind pressures.

R4410.2.3.1.5 Exterior garage doors shall be designed and constructed to actively or passively lock in the closed position when subjected to a uniform lateral pressure in excess of 50 percent of the design wind pressure as prescribed in Section R4403.

R4410.2.3.1.6 The architect or professional engineer of record shall be required to detail on the drawings submitted for permit, rough opening dimensions, supporting framework, method of attachment and waterproofing procedures for all garage doors, passage doors, skylights, operative and inoperative windows in exterior walls. Said framework and method of attachment shall be designed and constructed so as to sufficiently resist the design wind pressures as outlined in Section R4403.

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~~**Exception:** When detailed engineered shop drawings, along with the notices of Product Approval, produced by the manufacturer's specialty engineer and approved by the architect or professional engineer of record, are admitted at the time of permit application, which completely identifies rough openings, supporting framework, method of attachment and waterproofing procedures are prepared and bear the signature and seal of a professional engineer.~~

~~**R4410.2.3.2 Tests.**~~

~~**R4410.2.3.2.1** Operative windows and door assemblies shall be tested in accordance with TAS 202 and ANSI/AAMA/NWWDA101/I.S.2, or 101/I.S.2/NAFS or AAMA/WDMA/CSA 101/I.S.2/A440 or TAS 202 and the forced entry prevention requirements of the Architectural Manufacturers Association (AAMA), Sections 1302.5 and 1303.5.~~

~~**Exceptions:**~~

~~1. Door assemblies installed in non-habitable areas where the door assembly and area are designed to accept water infiltration, need not be tested for water infiltration.~~

~~2. Door assemblies installed where the overhang (OH) ratio is equal to or more than 1 need not be tested for water infiltration. The overhang ratio shall be calculated by the following equation:~~

~~OH ratio = OH Length/OH Height~~

~~Where:~~

~~OH Length = The horizontal measure of how far an overhang over a door projects out from door's surface.~~

~~OH Height = The vertical measure of the distance from the door's sill to the bottom of the overhang over a door.~~

~~**R4410.2.3.2.1.1** Glazed curtain wall, window wall and storefront systems shall be tested in accordance with the requirements of this section and the requirements of the American Architectural Manufacturers Association (AAMA) Standard 501, following test load sequence and test load duration in TAS 202.~~

~~**Exceptions:**~~

~~1. Door assemblies installed in non-habitable areas where the door assembly and area are designed to accept water infiltration, need not be tested for water infiltration.~~

~~2. Door assemblies installed where the overhang (OH) ratio is equal to or more than 1 need not be tested for water infiltration. The overhang ratio shall be calculated by the following equation:~~

~~OH ratio = OH Length/OH Height~~

~~Where:~~

~~OH Length = The horizontal measure of how far an overhang over a door projects out from door's surface.~~

~~OH Height = The vertical measure of the distance from the door's sill to the bottom of the overhang over a door.~~

~~3. Pass-through windows for serving from a single-family kitchen, where protected by a roof overhang of 5 feet (1.5 m) or more shall be exempted from the requirements of the water infiltration test.~~

~~**R4410.2.3.2.2** Such assemblies with permanent muntin bars shall be tested with muntin bars in place.~~

~~**R4410.2.3.2.3** Such assemblies shall be installed in accordance with the conditions of test and approval.~~

~~**R4410.2.3.2.5** Comparative analysis of operative windows and glazed doors may be made provided the proposed unit complies with the following:~~

~~1. Shall always be compared with a tested and currently approved unit.~~

~~2. Varies only in width, height and/or load requirements.~~

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~~3. Shall not exceed 100 percent of the proportional deflection for fiber stress of the intermediate members of the approved unit.~~

~~4. Shall conform as to extruded members, reinforcement and in all other ways with the tested approved unit.~~

~~5. Shall not exceed 100 percent of the concentrated load at the juncture of the intermediate members and the frame of the approved unit.~~

~~6. Shall not permit more air and water infiltration than the approved unit based on the height above grade.~~

~~7. Compared unit shall not exceed the maximum cyclic pressure when tested per TAS 203.~~

R4410.2.3.2.6 ~~Comparative analysis of fixed glass windows may be made provided the proposed unit complies with the following:~~

~~1. Shall always be compared with a tested and currently approved unit.~~

~~2. Varies only in width, height and/or load requirements.~~

~~3. The design is identical in all respects. e.g.: extrusions, glazing system, joinery, fasteners, etc.~~

~~4. Shall not permit more air and water infiltration than the approved unit based on height above grade.~~

~~5. The maximum uniform load distribution (ULD) of any side is equal to the uniform load carried by the side divided by the length of the side.~~

~~6. The ULD of any member must not exceed the ULD of the corresponding member of the tested window.~~

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~~7. The uniform load distribution on each member shall be calculated in accordance to "Section 2, Engineering Design Rules" of the AAMA 103.3-83 Procedural Guide.~~

~~8. Compared unit shall not exceed the maximum cyclic pressure when tested per TAS 203.~~

~~**R4410.2.3.3 Construction details.** Construction details for fixed glass shall comply with the requirements of this paragraph except that structural glazing as defined in Section 202 need not comply with this section, but shall comply with Section R4410.6.~~

~~**R4410.2.3.3.1** Each light of fixed glass more than 3 feet (914 mm) in width shall have two approved setting blocks or approved suspension clamps. Setting blocks shall be Neoprene 70-90 Shore A durometer hardness or approved equal.~~

~~**R4410.2.3.3.2** Fixed glass lights shall be set in corrosion resistant metal frames and shall comply with applicable requirements of Section R4403 for wind loads, allowable stresses and load tests. Fixed glass lights may be set in wood, metal or concrete frames as permitted for the types of construction by Chapters 3 through 4 of the Florida Building Code, Building.~~

~~**R4410.2.3.3.3** Wood shall have been preservative treated or shall be of a durable species as defined in Section R4409.13.2.~~

~~**R4410.2.3.3.4** Attachment shall be as set forth in Section R4403 and shall be corrosion resistant.~~

~~**R4410.2.3.3.5** Glass in fixed lights shall be securely and continuously supported at the perimeter of each sheet unless the design is based on one or more unsupported edges. Supporting members such as division bars and mullions shall be designed by rational analysis to support the wind pressures set forth in Section R4403. Supporting bars shall be attached at the ends to resist the loads set forth in Section R4403 .~~

~~**R4410.2.3.3.6** The depth of the glazing rabbet and depth of engagement in the rabbet, for fixed glass, shall be based on consideration of the dimensional reduction from deflection and the dimensional changes caused by temperature.~~

~~**R4410.2.3.4** Gaskets used in glazing systems shall comply with the following standards as applicable:~~

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1. ASTM C 864, Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers

2. ASTM C 509, Elastomeric Cellular Preformed Gaskets and Sealing Material

3. ASTM C 1115, Dense Elastomeric Silicone Rubber Gaskets and Accessories

4. ASTM E 2203, Dense Thermoplastic Elastomers Used for Compression Seals, Gaskets, Setting Blocks, Spacers and Accessories.

SECTION R4410.3

HIGH-VELOCITY HURRICANE ZONES — GLASS VENEER

R4410.3.1 Glass veneer shall be as set forth in this section.

R4410.3.2 Dimension. Glass veneer units shall be not less than 11/32 inch (8.7 mm) in thickness. No unit shall be larger in area than 10 square feet (0.93 m2) where 15 feet (4.6 m) or less above the grade directly below, nor larger than 6 square feet (0.56 m2) where more than 15 feet (4.6 m) above the grade directly below.

R4410.3.3 Attachment. Every glass veneer unit shall be attached to the backing with approved mastic cement and corrosion-resistant ties and shall be supported on shelf angles.

R4410.3.3.1 Where more than 6 feet (1829 mm) above grade, veneer shall be supported by shelf angles, and ties shall be used in both horizontal and vertical joints.

R4410.3.3.2 Below a point 6 feet (1829 mm) above grade, glass veneer shall rest on shelf angles. Veneering shall not be supported on construction which is not an integral part of the wall, and over sidewalks shall be supported on a shelf angle not less than 1/4 inch (6.4 mm) above grade.

R4410.3.3.3 All edges of glass veneer shall be ground.

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~~**R4410.3.4 Mastic.**~~

~~**R4410.3.4.1** The mastic shall cover not less than one-half of the area of the unit after the unit has been set in place and shall be neither less than 1/4 inch (6.4 mm) nor more than 1/2 inch (12.7 mm) in thickness.~~

~~**R4410.3.4.2** The mastic shall be insoluble in water and shall not lose its adhesive qualities when dry.~~

~~**R4410.3.4.3** Absorbent surfaces shall be sealed by a bonding coat before mastic is applied. The bonding coat shall be cohesive with the mastic.~~

~~**R4410.3.4.4** Glass veneer surfaces to which mastic is applied shall be clean and uncoated.~~

~~**R4410.3.4.5** Space between edges of glass veneer shall be filled uniformly with an approved type pointing compound.~~

~~**R4410.3.5 Shelf angles and ties.**~~

~~**R4410.3.5.1** Shelf angles shall be of corrosion-resistant material capable of supporting four times the width of the supported veneer. The shelf angles shall be spaced vertically in alternate horizontal joints, but not more than 3 feet (914 mm) apart. Shelf angles shall be secured to the wall at intervals not exceeding 2 feet (610 mm) with corrosion-resistant bolts not less than 1/4 inch (6.4 mm) diameter. Bolts shall be set in masonry and secured by lead shields.~~

~~**R4410.3.5.2** Ties shall be of corrosion-resistant metal as manufactured especially for holding glass veneer sheets to masonry surfaces. There shall be not less than one such approved tie for each 2 square feet (0.19 m2) of veneer surface.~~

~~**R4410.3.6 Backing**. Exterior glass veneer shall be applied only upon masonry, concrete or stucco.~~

~~**R4410.3.7 Expansion joints.** Glass veneer units shall be separated from each other and from adjoining materials by an expansion joint at least 1/16 inch (1.6 mm) in thickness. There shall be at least 1/64 inch (0.4 mm) clearance between bolts and the adjacent glass.~~

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~~**SECTION R4410.4**~~

~~**HIGH-VELOCITY HURRICANE ZONES-STORM SHUTTERS/EXTERNAL PROTECTIVE DEVICES**~~

~~**R4410.4.1 General.** Unless exterior wall components including but not limited to structural glazing, doors and windows of enclosed buildings have specific Product Approval to preserve the enclosed building envelope against impact loads as set forth in Section R4403, all such components shall be protected by product approved storm shutters.~~

~~**R4410.4.2** The storm shutters shall be designed and constructed to insure a minimum of 1 inch (25 mm) separation at maximum deflection with components and frames of components they are to protect unless the components and frame are specifically designed to receive the load of storm shutters, and shall be designed to resist the wind pressures as set forth in Section R4403 by methods admitting of rational analysis based on established principles of design. Storm shutter shall also be designed to comply with the impact load requirements included within Section R4403.~~

~~**R4410.4.3** The storm shutter design calculations and detailed drawings, including attachment to the main structure, shall be prepared by and bear the seal of a qualified Florida registered delegated engineer, or if qualified to prepare such design, by the engineer or architect of record, which architect or engineer shall be proficient in structural design. The architect or engineer of record shall, in all instances, review and approve documents prepared by the delegated engineer.~~

~~**R4410.4.4** Storm shutters shall be approved by the product control section and shall bear the name of the company engraved in every section of the system.~~

~~**R4410.4.5** Deflection shall not exceed the limits set forth in Section R4403.~~

~~**R4410.4.6.1** Shutters used to protect openings above the first story of any building or structure must be permanently installed and closable from the inside of the building or structure unless such openings are accessible without the use of a ladder or lift, or shutters can be installed from the interior of the building or structure.~~

~~**Exception:** Group R3 detached single-family residences not exceeding two stories.~~

~~**R4410.4.7** Storm shutters must completely cover an opening in all directions.~~

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R4410.4.7.1 On any side of an opening, the maximum side clearance between the shutter and a wall or inset surface shall be 1/4 inch (6.4 mm). Any distance in excess of 1/4 inch (6.4 mm) shall require end closure or shutter overlap, where applicable.

R4410.4.7.2 Shutter overlap shall be a minimum of one and one-half times the side clearance between the shutter and wall.

R4410.4.7.3 End closures shall be designed to resist wind loads specified in Section R4403, based on rational analysis.

SECTION R4410.5

HIGH-VELOCITY HURRICANE ZONES — CURTAIN WALLS

R4410.5.1 Scope. This section prescribes requirements for curtain walls of buildings or structures regulated by this code.

R4410.5.2 Definition. A curtain wall is any prefabricated assembly of various components to enclose a building usually attached to and/or supported by the building frame other than a single door, or window, masonry units, poured in place concrete and siding of single membrane metal, wood or plastic.

R4410.5.3 Curtain walls, as defined in Section R4410.5.2, shall be designed and constructed in accordance with the requirements of this section.

R4410.5.4 Structural glazing in curtain walls shall also comply with the requirements of Section R4410.6.

R4410.5.5 General.

R4410.5.5.1 All structural elements of curtain wall systems and their attachments (including embedments) to the main structural frame shall be designed by and bear the seal of a qualified Florida registered delegated engineer, or if qualified to prepare such design, by the engineer or architect of record, which architect or engineer shall be proficient in structural design. The engineer of record shall, in all instances, review and approve documents prepared by the delegated engineer.

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R4410.5.5.2 Curtain wall systems supported from more than two adjacent floors shall be designed to withstand all imposed loads without exceeding allowable stresses in the event of destruction or failure of any single span within the system. Documents for the main building permit shall include sufficient details describing the curtain wall system attachment to the main structure. This portion of the contract documents, if not prepared by the qualified engineer or architect of record, shall bear the signature and seal of the qualified Florida registered delegated engineer charged with the responsibility for the design of the curtain wall system.

R4410.5.5.3 Individual mullions acting as a continuous member shall transfer loads through supports from no more than three adjacent floors.

R4410.5.5.4 Materials. The materials used in any curtain wall shall comply with the applicable provisions of this code.

SECTION R4410.6

HIGH-VELOCITY HURRICANE ZONES — STRUCTURAL GLAZING SYSTEMS

R4410.6.1 Scope. This section prescribes requirements for structural glazing systems of buildings or structures regulated by this code.

R4410.6.2 Application.

R4410.6.2.1 Structural glazing, as defined in Section R4410.5.3, shall be designed and constructed in accordance with the requirements of this section.

R4410.6.2.2 Structural glazing systems used in curtain walls shall also comply with the requirements of Section R4410.

R4410.6.3 Definition. The terms used in this section shall be defined as set forth in Section Chapter 2 of this code.

R4410.6.4 Standards. Adhesives and sealants used in structural glazing systems shall comply with following standards:

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~~ASTM C 794, Test Method for Adhesion In Peel of Elastomeric Joint Sealants.~~

~~ASTM C 920, Specification for Elastomeric Joint Sealants.~~

~~ASTM D 412, Test Methods for Rubber Properties in Tension.~~

~~ASTM D 624, Test Method for Rubber Property Tear Resistance.~~

~~ASTM D 2240, Test Method for Rubber Property Durometer Hardness.~~

~~Federal Specifications TT S 001543A and TT S 00230C.~~

~~ASTM E 331, Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors.~~

~~ASTM E 330, Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors.~~

~~**R4410.6.5 Design.**~~

~~**R4410.6.5.1 General.** Structural glazing systems shall be designed by and bear the seal of a Florida registered professional engineer.~~

~~**R4410.6.5.2 Materials.**~~

~~**R4410.6.5.2.1 Identification.** All materials shall be clearly identified as to manufacturer and manufacturer's product number.~~

~~**R4410.6.5.2.2 Adhesives and sealants.**~~

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~~**R4410.6.5.2.2.1** Only approved silicone elastomer adhesives and sealants shall be used for fastening glass lights and other panels to curtain wall framing.~~

~~**R4410.6.5.2.2.2** Such adhesives and sealants shall be of a polymer that is 100 percent silicone.~~

~~**R4410.6.5.2.2.3** Adhesives and sealants shall have been tested in accordance with the standards set forth in Section R4410.6.4.~~

~~**R4410.6.5.3 Manufacturer's testing, recommendation and approval.**~~

~~**R4410.6.5.3.1** Compatibility of all components and fabrication procedures of structural glazing systems shall be tested, approved and recommended in writing by the manufacturer of the adhesive; the manufacturer of the coating; whether it is anodized, baked or otherwise applied and the manufacturer of the glass panel.~~

~~**R4410.6.5.3.2** Manufacturer's testing, recommendation and approval shall address, but shall not be limited in scope by the following sections.~~

~~**R4410.6.5.3.2.1** The compatibility of the sealant with metal, glazing materials, shims, spacers, setting blocks, backer rods, gaskets and other materials.~~

~~**R4410.6.5.3.2.2** Adhesion to the designated substrates and adhesion of the substrates to the base metal.~~

~~**R4410.6.5.3.2.3** The design and structural capability of silicone joints and cross sections.~~

~~**R4410.6.5.4 Structural requirements.**~~

~~**R4410.6.5.4.1 Design of structural seals.**~~

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~~**R4410.6.5.4.1.1** The design stress of the structural silicone shall not exceed 20 psi (138 kPa) for materials having a minimum strength of 100 psi (690 kPa) at the weakest element in the line of stress.~~

~~**R4410.6.5.4.1.2** Such design stress shall also provide for a safety factor of not less than 5.0.~~

~~**R4410.6.5.4.1.3** Safety factors greater than 5.0 shall be specified by the engineer when required or recommended by the manufacturer.~~

~~**R4410.6.5.4.1.4** The silicone structural seal shall have a maximum modulus of elasticity to allow no more than 25 percent movement of the joint width at 20 psi (138 kPa) stress.~~

~~**R4410.6.5.4.1.5** In insulating glass units, the secondary silicone seal shall be designed to withstand a minimum of half the design negative wind load applicable to the outboard lights.~~

~~**R4410.6.5.4.2 Bonding limits.** Structural glazing shall be limited to adhesive bonding on one side or on two opposing sides of an infill glass lights or panel.~~

~~**Exception:** Three or four side bonding shall be permitted only when structural glazing units are shop fabricated and shop glazed.~~

~~**R4410.6.5.4.3 Job site reglazing.**~~

~~**R4410.6.5.4.3.1** Job site replacement reglazing shall be permitted only when performed following a procedure approved in writing by the applicable structural silicone manufacturer.~~

~~**R4410.6.5.4.3.2** Replacement shall be performed only by individuals or firms approved or certified by the silicone manufacturer.~~

~~**R4410.6.6 Inspections, testing and recertification.**~~

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~~**R4410.6.6.1** A minimum of 1 percent of the structurally glazed panels shall be tested for load carrying capacity and sealant adhesion in accordance with Section R4403 and ASTM E 330.~~

~~**R4410.6.6.2** Structural glazed panels shall be inspected by a Florida registered architect or licensed engineer for conformance with the approved design and installation procedures determined by the authority having jurisdiction prior to the erection of such panels and after the seal curing period established by the silicone manufacturer.~~

~~**R4410.6.6.3** It shall be the responsibility of the contractor to verify the adhesion of the cured sealant periodically throughout the application to assure compliance with the manufacturer's specifications and quality of application.~~

~~**R4410.6.6.4** Structural glazing systems on threshold buildings shall be recertified by the owner as specified by the authority having jurisdiction at six month intervals for the first year after installation. Subsequently, such systems shall be recertified every five years at regular intervals.~~

~~**R4410.6.6.5** Such recertifications shall determine the structural condition and adhesion capacity of the silicone sealant.~~

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SECTION R4410
HIGH-VELOCITY HURRICANE ZONES — GLASS AND GLAZING

R4410.1 General.

R4410.1.1 Refer to Chapter 24 of the Florida Building Code, Building ~~Exterior wall cladding, surfacing and glazing, where provided, shall be as set forth in Sections R4410 through R4415~~.

~~**R4410.1.2** Exterior wall cladding, surfacing and glazing shall be designed and constructed to sufficiently resist the full pressurization from the wind loads prescribed in Section R4403 and the concentrated loads that result from hurricane-generated wind-borne debris.~~

~~1. Exterior wall cladding, surfacing and glazing, within the lowest 30 feet (9.1 m) of the exterior building walls shall be of sufficient strength to resist large missile impacts as outlined in Section R4403.~~

~~2. Exterior wall cladding, surfacing and glazing located above the lowest 30 feet of the exterior building walls shall be of sufficient strength to resist small missile impacts as outlined in Section R4403.~~

~~**Exception:** Exterior wall cladding, surfacing and glazing when protected by fixed, operable or portable shutters or screens which have Product Approval to resist full pressurization from wind loads as well as large and small missile impacts as outlined in Section R4403, without deforming to the point where the substrate being protected is compromised.~~

~~**R4410.1.4** All exterior wall cladding, surfacing, garage doors, skylights, operative and inoperative windows shall have Product Approval.~~

~~**SECTION R4410.2**~~
~~**HIGH-VELOCITY HURRICANE ZONES — WINDOWS, DOORS, GLASS AND GLAZING**~~

~~**R4410.2.1 General.**~~

~~**R4410.2.1.1** Windows, doors, glass and glazing shall be as set forth in this section.~~

~~**R4410.2.1.2** Glass shall comply with ASTM C 1036 requirements for flat glass Type I and II and GSA DD-G-451c Standard for Glass, Flat and Corrugated, for Glazing Mirrors and Other Uses .~~

~~R4410.2.1.5 Heat-strengthened and ceramic-coated spandrel glass shall comply with ASTM C 1048.~~

~~**R4410.2.1.7** Installed glass shall not be less than single strength B quality unless otherwise approved by the building official, and where edges are exposed they shall be seamed or ground.~~

~~**R4410.2.1.8** Where a light of glass is of such height above grade that the top 50 percent or more is in a zone of greater wind load, the area of the entire light shall be limited as for the greater height above grade.~~

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R4410.2.1.9 Replacement of any glazing or part thereof shall be designed and constructed in accordance with Florida Existing Building Code .

R4410.2.1.10 Replacement of glazing of more than one light or more than 30 percent of the total area glazed shall conform to the requirements of the section.

R4410.2.1.11 Fixed glazing used as an exterior component shall require Product Approval. Comparative analysis in compliance with R4410.2.3.2.6 by a Florida licensed engineer or architect may be accepted when the actual pressure and geometry conditions differ from the conditions shown in the approval.

R4410.2.2 Fixed glass in exterior walls.

R4410.2.2.1 Limits of size of glass.

R4410.2.2.1.1 The minimum thickness of annealed float glazing materials used in exterior walls shall be determined and shall not be less than as set forth in ASTM E 1300.

R4410.2.2.1.2 For glazing materials other than annealed float, use the glazing material resistance factor used in ASTM E 1300.

R4410.2.2.1.3 Corrugated glass and other special glass shall be limited to spans determined by analysis and test to resist the loads set forth in Section R4403 based on fiber stresses not exceeding 4,000 psi (27.58 MPa).

R4410.2.2.1.4 Glass block shall have Product Approval.

R4410.2.3 Doors and operative windows in exterior walls.

R4410.2.3.1 Design and approval.

R4410.2.3.1.1 The design and approval of sliding doors, swinging doors and operative windows in exterior walls, including the supporting members shall be based on the proposed use-height above grade in accordance with Section R4403 .

R4410.2.3.1.2 Maximum glass sizes shall comply with ASTM E 1300.

R4410.2.3.1.4 The architect or professional engineer of record shall be required to specify the design wind pressure, determined in accordance with Section R4403, for all garage doors, skylights operative windows and fixed glazing. The design wind pressure for each component of the exterior building surface, shall be incorporated into the building design drawing so as to allow the respective manufacturer to size the prefabricated assembly for the proper wind pressures.

R4410.2.3.1.5 Exterior garage doors shall be designed and constructed to actively or passively lock in the closed position when subjected to a uniform lateral pressure in excess of 50 percent of the design wind pressure as prescribed in Section R4403.

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R4410.2.3.1.6 The architect or professional engineer of record shall be required to detail on the drawings submitted for permit, rough opening dimensions, supporting framework, method of attachment and waterproofing procedures for all garage doors, passage doors, skylights, operative and inoperative windows in exterior walls. Said framework and method of attachment shall be designed and constructed so as to sufficiently resist the design wind pressures as outlined in Section R4403.

Exception: When detailed engineered shop drawings, along with the notices of Product Approval, produced by the manufacturer's specialty engineer and approved by the architect or professional engineer of record, are admitted at the time of permit application, which completely identifies rough openings, supporting framework, method of attachment and waterproofing procedures are prepared and bear the signature and seal of a professional engineer.

R4410.2.3.2 Tests.

R4410.2.3.2.1 Operative windows and door assemblies shall be tested in accordance with TAS 202 and ANSI/AAMA/NWWDA101/I.S.2, or 101/I.S.2/NAFS or AAMA/WDMA/CSA 101/I.S.2/A440 or TAS 202 and the forced entry prevention requirements of the Architectural Manufacturers Association (AAMA), Sections 1302.5 and 1303.5.

Exceptions:

1. Door assemblies installed in non-habitable areas where the door assembly and area are designed to accept water infiltration, need not be tested for water infiltration.

2. Door assemblies installed where the overhang (OH) ratio is equal to or more than 1 need not be tested for water infiltration. The overhang ratio shall be calculated by the following equation:

OH ratio = OH Length/OH Height

Where:

OH Length = The horizontal measure of how far an overhang over a door projects out from door's surface.

OH Height = The vertical measure of the distance from the door's sill to the bottom of the overhang over a door.

R4410.2.3.2.1.1 Glazed curtain wall, window wall and storefront systems shall be tested in accordance with the requirements of this section and the requirements of the American Architectural Manufacturers Association (AAMA) Standard 501, following test load sequence and test load duration in TAS 202.

Exceptions:

1. Door assemblies installed in non-habitable areas where the door assembly and area are designed to accept water infiltration, need not be tested for water infiltration.

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~~2. Door assemblies installed where the overhang (OH) ratio is equal to or more than 1 need not be tested for water infiltration. The overhang ratio shall be calculated by the following equation:~~

~~OH ratio = OH Length/OH Height~~

~~Where:~~

~~OH Length = The horizontal measure of how far an overhang over a door projects out from door's surface.~~

~~OH Height = The vertical measure of the distance from the door's sill to the bottom of the overhang over a door.~~

~~3. Pass-through windows for serving from a single-family kitchen, where protected by a roof overhang of 5 feet (1.5 m) or more shall be exempted from the requirements of the water infiltration test.~~

~~R4410.2.3.2.2~~ ~~Such assemblies with permanent muntin bars shall be tested with muntin bars in place.~~

~~R4410.2.3.2.3~~ ~~Such assemblies shall be installed in accordance with the conditions of test and approval.~~

~~R4410.2.3.2.5~~ ~~Comparative analysis of operative windows and glazed doors may be made provided the proposed unit complies with the following:~~

~~1. Shall always be compared with a tested and currently approved unit.~~

~~2. Varies only in width, height and/or load requirements.~~

~~3. Shall not exceed 100 percent of the proportional deflection for fiber stress of the intermediate members of the approved unit.~~

~~4. Shall conform as to extruded members, reinforcement and in all other ways with the tested approved unit.~~

~~5. Shall not exceed 100 percent of the concentrated load at the juncture of the intermediate members and the frame of the approved unit.~~

~~6. Shall not permit more air and water infiltration than the approved unit based on the height above grade.~~

~~7. Compared unit shall not exceed the maximum cyclic pressure when tested per TAS 203.~~

~~R4410.2.3.2.6~~ ~~Comparative analysis of fixed glass windows may be made provided the proposed unit complies with the following:~~

~~1. Shall always be compared with a tested and currently approved unit.~~

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2. Varies only in width, height and/or load requirements.

3. The design is identical in all respects. e.g.: extrusions, glazing system, joinery, fasteners, etc.

4. Shall not permit more air and water infiltration than the approved unit based on height above grade.

5. The maximum uniform load distribution (ULD) of any side is equal to the uniform load carried by the side divided by the length of the side.

6. The ULD of any member must not exceed the ULD of the corresponding member of the tested window.

7. The uniform load distribution on each member shall be calculated in accordance to "Section 2, Engineering Design Rules" of the AAMA 103.3-83 Procedural Guide.

8. Compared unit shall not exceed the maximum cyclic pressure when tested per TAS 203.

R4410.2.3.3 Construction details. Construction details for fixed glass shall comply with the requirements of this paragraph except that structural glazing as defined in Section 202 need not comply with this section, but shall comply with Section R4410.6.

R4410.2.3.3.1 Each light of fixed glass more than 3 feet (914 mm) in width shall have two approved setting blocks or approved suspension clamps. Setting blocks shall be Neoprene 70-90 Shore A durometer hardness or approved equal.

R4410.2.3.3.2 Fixed glass lights shall be set in corrosion resistant metal frames and shall comply with applicable requirements of Section R4403 for wind loads, allowable stresses and load tests. Fixed glass lights may be set in wood, metal or concrete frames as permitted for the types of construction by Chapters 3 through 4 of the Florida Building Code, Building.

R4410.2.3.3.3 Wood shall have been preservative treated or shall be of a durable species as defined in Section R4409.13.2.

R4410.2.3.3.4 Attachment shall be as set forth in Section R4403 and shall be corrosion resistant.

R4410.2.3.3.5 Glass in fixed lights shall be securely and continuously supported at the perimeter of each sheet unless the design is based on one or more unsupported edges. Supporting members such as division bars and mullions shall be designed by rational analysis to support the wind pressures set forth in Section R4403. Supporting bars shall be attached at the ends to resist the loads set forth in Section R4403 .

R4410.2.3.3.6 The depth of the glazing rabbet and depth of engagement in the rabbet, for fixed glass, shall be based on consideration of the dimensional reduction from deflection and the dimensional changes caused by temperature.

R4410.2.3.4 Gaskets used in glazing systems shall comply with the following standards as applicable:

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~~1. ASTM C 864, Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers~~

~~2. ASTM C 509, Elastomeric Cellular Preformed Gaskets and Sealing Material~~

~~3. ASTM C 1115, Dense Elastomeric Silicone Rubber Gaskets and Accessories~~

~~4. ASTM E 2203, Dense Thermoplastic Elastomers Used for Compression Seals, Gaskets, Setting Blocks, Spacers and Accessories.~~

~~SECTION R4410.3~~
~~HIGH-VELOCITY HURRICANE ZONES — GLASS VENEER~~

~~R4410.3.1~~ ~~Glass veneer shall be as set forth in this section.~~

~~R4410.3.2 Dimension.~~ ~~Glass-veneer units shall be not less than 11/32 inch (8.7 mm) in thickness. No unit shall be larger in area than 10 square feet (0.93 m2) where 15 feet (4.6 m) or less above the grade directly below, nor larger than 6 square feet (0.56 m2) where more than 15 feet (4.6 m) above the grade directly below.~~

~~R4410.3.3 Attachment.~~ ~~Every glass-veneer unit shall be attached to the backing with approved mastic cement and corrosion-resistant ties and shall be supported on shelf angles.~~

~~R4410.3.3.1~~ ~~Where more than 6 feet (1829 mm) above grade, veneer shall be supported by shelf angles, and ties shall be used in both horizontal and vertical joints.~~

~~R4410.3.3.2~~ ~~Below a point 6 feet (1829 mm) above grade, glass veneer shall rest on shelf angles. Veneering shall not be supported on construction which is not an integral part of the wall, and over sidewalks shall be supported on a shelf angle not less than 1/4 inch (6.4 mm) above grade.~~

~~R4410.3.3.3~~ ~~All edges of glass veneer shall be ground.~~

~~R4410.3.4 Mastic.~~

~~R4410.3.4.1~~ ~~The mastic shall cover not less than one-half of the area of the unit after the unit has been set in place and shall be neither less than 1/4 inch (6.4 mm) nor more than 1/2 inch (12.7 mm) in thickness.~~

~~R4410.3.4.2~~ ~~The mastic shall be insoluble in water and shall not lose its adhesive qualities when dry.~~

~~R4410.3.4.3~~ ~~Absorbent surfaces shall be sealed by a bonding coat before mastic is applied. The bonding coat shall be cohesive with the mastic.~~

~~R4410.3.4.4~~ ~~Glass veneer surfaces to which mastic is applied shall be clean and uncoated.~~

~~R4410.3.4.5~~ ~~Space between edges of glass veneer shall be filled uniformly with an approved type pointing compound.~~

~~R4410.3.5 Shelf angles and ties.~~

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R4410.3.5.1 Shelf angles shall be of corrosion-resistant material capable of supporting four times the width of the supported veneer. The shelf angles shall be spaced vertically in alternate horizontal joints, but not more than 3 feet (914 mm) apart. Shelf angles shall be secured to the wall at intervals not exceeding 2 foot (610 mm) with corrosion resistant bolts not less than 1/4 inch (6.4 mm) diameter. Bolts shall be set in masonry and secured by lead shields.

R4410.3.5.2 Ties shall be of corrosion resistant metal as manufactured especially for holding glass veneer sheets to masonry surfaces. There shall be not less than one such approved tie for each 2 square feet (0.19 m2) of veneer surface.

R4410.3.6 Backing. Exterior glass veneer shall be applied only upon masonry, concrete or stucco.

R4410.3.7 Expansion joints. Glass veneer units shall be separated from each other and from adjoining materials by an expansion joint at least 1/16 inch (1.6 mm) in thickness. There shall be at least 1/64 inch (0.4 mm) clearance between bolts and the adjacent glass.

SECTION R4410.4
HIGH-VELOCITY HURRICANE ZONES STORM SHUTTERS/EXTERNAL PROTECTIVE DEVICES

R4410.4.1 General. Unless exterior wall components including but not limited to structural glazing, doors and windows of enclosed buildings have specific Product Approval to preserve the enclosed building envelope against impact loads as set forth in Section R4403, all such components shall be protected by product approved storm shutters.

R4410.4.2 The storm shutters shall be designed and constructed to insure a minimum of 1 inch (25 mm) separation at maximum deflection with components and frames of components they are to protect unless the components and frame are specifically designed to receive the load of storm shutters, and shall be designed to resist the wind pressures as set forth in Section R4403 by methods admitting of rational analysis based on established principles of design. Storm shutter shall also be designed to comply with the impact load requirements included within Section R4403.

R4410.4.3 The storm shutter design calculations and detailed drawings, including attachment to the main structure, shall be prepared by and bear the seal of a qualified Florida-registered delegated engineer, or if qualified to prepare such design, by the engineer or architect of record, which architect or engineer shall be proficient in structural design. The architect or engineer of record shall, in all instances, review and approve documents prepared by the delegated engineer.

R4410.4.4 Storm shutters shall be approved by the product control section and shall bear the name of the company engraved in every section of the system.

R4410.4.5 Deflection shall not exceed the limits set forth in Section R4403.

R4410.4.6.1 Shutters used to protect openings above the first story of any building or structure must be permanently installed and closable from the inside of the building or structure unless such openings are accessible without the use of a ladder or lift, or shutters can be installed from the interior of the building or structure.

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Exception: Group R3 detached single-family residences not exceeding two stories.

R4410.4.7 Storm shutters must completely cover an opening in all directions.

R4410.4.7.1 On any side of an opening, the maximum side clearance between the shutter and a wall or inset surface shall be 1/4 inch (6.4 mm). Any distance in excess of 1/4 inch (6.4 mm) shall require end closure or shutter overlap, where applicable.

R4410.4.7.2 Shutter overlap shall be a minimum of one and one-half times the side clearance between the shutter and wall.

R4410.4.7.3 End closures shall be designed to resist wind loads specified in Section R4403, based on rational analysis.

SECTION R4410.5
HIGH-VELOCITY HURRICANE ZONES — CURTAIN WALLS

R4410.5.1 Scope. This section prescribes requirements for curtain walls of buildings or structures regulated by this code.

R4410.5.2 Definition. A curtain wall is any prefabricated assembly of various components to enclose a building usually attached to and/or supported by the building frame other than a single door, or window, masonry units, poured in place concrete and siding of single membrane metal, wood or plastic.

R4410.5.3 Curtain walls, as defined in Section R4410.5.2, shall be designed and constructed in accordance with the requirements of this section.

R4410.5.4 Structural glazing in curtain walls shall also comply with the requirements of Section R4410.6.

R4410.5.5 General.

R4410.5.5.1 All structural elements of curtain wall systems and their attachments (including embedments) to the main structural frame shall be designed by and bear the seal of a qualified Florida-registered delegated engineer, or if qualified to prepare such design, by the engineer or architect of record, which architect or engineer shall be proficient in structural design. The engineer of record shall, in all instances, review and approve documents prepared by the delegated engineer.

R4410.5.5.2 Curtain wall systems supported from more than two adjacent floors shall be designed to withstand all imposed loads without exceeding allowable stresses in the event of destruction or failure of any single span within the system. Documents for the main building permit shall include sufficient details describing the curtain wall system attachment to the main structure. This portion of the contract documents, if not prepared by the qualified engineer or architect of record, shall bear the signature and seal of the qualified Florida registered delegated engineer charged with the responsibility for the design of the curtain wall system.

R4410.5.5.3 Individual mullions acting as a continuous member shall transfer loads through supports from no more than three adjacent floors.

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R4410.5.5.4 Materials. The materials used in any curtain wall shall comply with the applicable provisions of this code.

SECTION R4410.6
HIGH-VELOCITY HURRICANE ZONES — STRUCTURAL GLAZING SYSTEMS

R4410.6.1 Scope. This section prescribes requirements for structural glazing systems of buildings or structures regulated by this code.

R4410.6.2 Application.

R4410.6.2.1 Structural glazing, as defined in Section R4410.5.3, shall be designed and constructed in accordance with the requirements of this section.

R4410.6.2.2 Structural glazing systems used in curtain walls shall also comply with the requirements of Section R4410.

R4410.6.3 Definition. The terms used in this section shall be defined as set forth in Section Chapter 2 of this code.

R4410.6.4 Standards. Adhesives and sealants used in structural glazing systems shall comply with following standards:

ASTM C 794, Test Method for Adhesion In Peel of Elastomeric Joint Sealants.

ASTM C 920, Specification for Elastomeric Joint Sealants.

ASTM D 412, Test Methods for Rubber Properties in Tension.

ASTM D 624, Test Method for Rubber Property Tear Resistance.

ASTM D 2240, Test Method for Rubber Property Durometer Hardness.

Federal Specifications TT-S-001543A and TT-S-00230C.

ASTM E 331, Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors.

ASTM E 330, Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors.

R4410.6.5 Design.

R4410.6.5.1 General. Structural glazing systems shall be designed by and bear the seal of a Florida registered professional engineer.

R4410.6.5.2 Materials.

R4410.6.5.2.1 Identification. All materials shall be clearly identified as to manufacturer and manufacturer's product number.

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R4410.6.5.2.2 Adhesives and sealants.

R4410.6.5.2.2.1 Only approved silicone elastomer adhesives and sealants shall be used for fastening glass lights and other panels to curtain wall framing.

R4410.6.5.2.2.2 Such adhesives and sealants shall be of a polymer that is 100 percent silicone.

R4410.6.5.2.2.3 Adhesives and sealants shall have been tested in accordance with the standards set forth in Section R4410.6.4.

R4410.6.5.3 Manufacturer's testing, recommendation and approval.

R4410.6.5.3.1 Compatibility of all components and fabrication procedures of structural glazing systems shall be tested, approved and recommended in writing by the manufacturer of the adhesive; the manufacturer of the coating; whether it is anodized, baked or otherwise applied and the manufacturer of the glass panel.

R4410.6.5.3.2 Manufacturer's testing, recommendation and approval shall address, but shall not be limited in scope by the following sections.

R4410.6.5.3.2.1 The compatibility of the sealant with metal, glazing materials, shims, spacers, setting blocks, backer rods, gaskets and other materials.

R4410.6.5.3.2.2 Adhesion to the designated substrates and adhesion of the substrates to the base metal.

R4410.6.5.3.2.3 The design and structural capability of silicone joints and cross sections.

R4410.6.5.4 Structural requirements.

R4410.6.5.4.1 Design of structural seals.

R4410.6.5.4.1.1 The design stress of the structural silicone shall not exceed 20 psi (138 kPa) for materials having a minimum strength of 100 psi (690 kPa) at the weakest element in the line of stress.

R4410.6.5.4.1.2 Such design stress shall also provide for a safety factor of not less than 5.0.

R4410.6.5.4.1.3 Safety factors greater than 5.0 shall be specified by the engineer when required or recommended by the manufacturer.

R4410.6.5.4.1.4 The silicone structural seal shall have a maximum modulus of elasticity to allow no more than 25 percent movement of the joint width at 20 psi (138 kPa) stress.

R4410.6.5.4.1.5 In insulating glass units, the secondary silicone seal shall be designed to withstand a minimum of half the design negative wind load applicable to the outboard lights.

R4410.6.5.4.2 Bonding limits. Structural glazing shall be limited to adhesive bonding on one side or on two opposing sides of an infill glass lights or panel.

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Exception: Three or four side bonding shall be permitted only when structural glazing units are shop fabricated and shop glazed.

R4410.6.5.4.3 Job-site reglazing.

R4410.6.5.4.3.1 Job site replacement reglazing shall be permitted only when performed following a procedure approved in writing by the applicable structural silicone manufacturer.

R4410.6.5.4.3.2 Replacement shall be performed only by individuals or firms approved or certified by the silicone manufacturer.

R4410.6.6 Inspections, testing and recertification.

R4410.6.6.1 A minimum of 1 percent of the structurally glazed panels shall be tested for load carrying capacity and sealant adhesion in accordance with Section R4403 and ASTM E 330.

R4410.6.6.2 Structural glazed panels shall be inspected by a Florida registered architect or licensed engineer for conformance with the approved design and installation procedures determined by the authority having jurisdiction prior to the erection of such panels and after the seal curing period established by the silicone manufacturer.

R4410.6.6.3 It shall be the responsibility of the contractor to verify the adhesion of the cured sealant periodically throughout the application to assure compliance with the manufacturer's specifications and quality of application.

R4410.6.6.4 Structural glazing systems on threshold buildings shall be recertified by the owner as specified by the authority having jurisdiction at six-month intervals for the first year after installation. Subsequently, such systems shall be recertified every five years at regular intervals.

R4410.6.6.5 Such recertifications shall determine the structural condition and adhesion capacity of the silicone sealant.

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S5018

Date Submitted	7/9/2012	**Section**	4411	**Proponent**	Michael Goolsby
Chapter	44	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

Eliminating unnecessary duplication of Chapter 44 HVHZ provisions

Rationale

Since the inception of the FBC, the content of Chapter 44 of the FBC, R has been a duplication of the sections contained in the FBC, Building volume. This proposed modification is intended to maintain the continuation of the current level of safety for the protection of life and property unchanged. Importantly, the proposed modification eliminates the need to unnecessarily duplicate more than one-hundred pages into the FBC, R volume, thereby reducing the size of the text contained in the FBC. Additionally, the proposed modification prevents the need to replace all of the non-wind related sections which were removed by legislative directive with dozens of individual modifications, each requiring review and approval; this process would otherwise be unavoidable in order to create a crucial integration of applicable and relevant building code sections into Chapter 44 requirements. In short, this proposed modification is a simplified approach resulting in identical code requirements but through a less time consuming, less complicated and less duplicative process.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to building and property owners relative to cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Impact to industry relative to the cost of compliance with code

None. The end result is a continuation of the applicability of base building code requirements for HVHZ residences as has existed in all previous editions of the Florida Building Code.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

It does so by ensuring direction to applicable sections of the code are provided.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

It does so by eliminating the need to unnecessarily duplicate building code provisions and affects a reduction in the number of code pages to be compiled, reviewed, edited and printed.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification does not curtail the use of any material, products, methods or systems of construction already deemed acceptable by the Florida Building Code or any alternate materials, design and methods of construction and equipment acceptable to the code official.

Does not degrade the effectiveness of the code

This modification does not degrade the effectiveness of the code; instead, it maintains the applicability of relevant base code requirements as has been the case since the first edition of the Florida Building Code.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5018 Text Modification

Page: 1

SECTION R4411

HIGH-VELOCITY HURRICANE ZONES — GYPSUM BOARD AND PLASTER

R4411.1 Refer to Chapter 25 of the Florida Building Code, Building.

~~**SECTION R4411.3**~~

~~**HIGH-VELOCITY HURRICANE ZONES — STUCCO**~~

~~**R4411.3.2 Stucco on walls other than concrete or masonry.**~~

~~**R4411.3.2.2 Moisture barrier.** Wood shall be covered with 15-pound (9-kg) roofing felt, or other approved equally moisture-resisting layer, and metal reinforcement as set forth herein.~~

~~**R4411.3.2.3 Metal reinforcement.**~~

~~**R4411.3.2.3.1** Stucco shall be reinforced with galvanized expanded metal weighing no less than 1.8 pounds per square yard (0.98 kg/m2), or galvanized welded or woven wire fabric weighing no less than 1 pound per square yard (0.54 kg/m2).~~

~~**R4411.3.2.3.2** All metal lathing shall be lapped not less than 1 inch (25 mm).~~

~~**R4411.3.2.3.3** Metal reinforcement shall be furred out from the backing by an approved method.~~

~~**R4411.3.2.3.4** Fastenings into wood sheathing or wood framing shall be by galvanized nails, with heads not less than 3/8 inch (9.5 mm) in diameter, driven to full penetration, using a minimum of two nails per square foot (0.093 m2), or by approved staples having equal resistance to withdrawal.~~

~~**R4411.3.2.3.5** The fastening of rib lath to metal members shall be by #8 galvanized sheet metal screws, using a minimum of two screws per square foot (0.093 m2).~~

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R4411.3.2.4 Application.

R4411.3.2.4.1 Stucco applied on metal lath shall be three-coat work applied to a total thickness of not less than 1/2 inch (12.7 mm) thickness except as required to meet fire resistance requirements.

R4411.3.2.4.2 The first coat shall be forced through all openings in the reinforcement to fill all spaces and scored horizontally.

R4411.3.2.4.3 The second coat shall be applied after the first coat has set sufficiently to provide a rigid backing.

R4411.3.2.4.4 The third coat shall be applied as soon as the second coat has attained initial set.

SECTION R4411.4

HIGH-VELOCITY HURRICANE ZONES — GYPSUM BOARD PRODUCTS AND ACCESSORY ITEMS

R4411.4.2 Standards. The following standards are adopted as set forth in Chapter 43.

Application and finishing of gypsum panel products GA-216-07

Fire Resistance Design Manual GA-600-06.

Specification for Gypsum Wallboard, ASTM C 36.

Specification for General Requirements for Zinc-Coated (Galvanized) Steel Sheets, by the Hot-Dip Process, ASTM A 525.

Specification for Light-gauge Steel Studs, Runners, and Rigid Furring Channels, ASTM C 645.

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~~Specification for Joint Treatment Materials for Gypsum Wallboard Construction, ASTM C 475.~~

~~**R4411.4.4** Wood studs and wood ceiling supports. Wood studs and wood ceiling supports shall comply with Section R4409.~~

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SECTION R4411
HIGH-VELOCITY HURRICANE ZONES — GYPSUM BOARD AND PLASTER

R4411.1 Refer to Chapter 25 of the Florida Building Code, Building.

~~**SECTION R4411.3**~~
~~**HIGH-VELOCITY HURRICANE ZONES — STUCCO**~~

~~**R4411.3.2 Stucco on walls other than concrete or masonry.**~~

~~**R4411.3.2.2 Moisture barrier.** Wood shall be covered with 15-pound (9 kg) roofing felt, or other approved equally moisture-resisting layer, and metal reinforcement as set forth herein.~~

~~**R4411.3.2.3 Metal reinforcement.**~~

~~**R4411.3.2.3.1** Stucco shall be reinforced with galvanized expanded metal weighing no less than 1.8 pounds per square yard (0.98 kg/m2), or galvanized welded or woven wire fabric weighing no less than 1 pound per square yard (0.54 kg/m2).~~

~~**R4411.3.2.3.2** All metal lathing shall be lapped not less than 1 inch (25 mm).~~

~~**R4411.3.2.3.3** Metal reinforcement shall be furred out from the backing by an approved method.~~

~~**R4411.3.2.3.4** Fastenings into wood sheathing or wood framing shall be by galvanized nails, with heads not less than 3/8 inch (9.5 mm) in diameter, driven to full penetration, using a minimum of two nails per square foot (0.093 m2), or by approved staples having equal resistance to withdrawal.~~

~~**R4411.3.2.3.5** The fastening of rib lath to metal members shall be by #8 galvanized sheet metal screws, using a minimum of two screws per square foot (0.093 m2).~~

~~**R4411.3.2.4 Application.**~~

~~**R4411.3.2.4.1** Stucco applied on metal lath shall be three-coat work applied to a total thickness of not less than 1/2 inch (12.7 mm) thickness except as required to meet fire resistance requirements.~~

~~**R4411.3.2.4.2** The first coat shall be forced through all openings in the reinforcement to fill all spaces and scored horizontally.~~

~~**R4411.3.2.4.3** The second coat shall be applied after the first coat has set sufficiently to provide a rigid backing.~~

~~**R4411.3.2.4.4** The third coat shall be applied as soon as the second coat has attained initial set.~~

~~**SECTION R4411.4**~~
~~**HIGH-VELOCITY HURRICANE ZONES — GYPSUM BOARD PRODUCTS AND ACCESSORY ITEMS**~~

~~**R4411.4.2 Standards.** The following standards are adopted as set forth in Chapter 43.~~

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~~Application and finishing of gypsum panel products GA 216-07~~

~~Fire Resistance Design Manual GA-600-06.~~

~~Specification for Gypsum Wallboard, ASTM C 36.~~

~~Specification for General Requirements for Zinc-Coated (Galvanized) Steel Sheets, by the Hot-Dip Process, ASTM A 525.~~

~~Specification for Light-gauge Steel Studs, Runners, and Rigid Furring Channels, ASTM C 645.~~

~~Specification for Joint Treatment Materials for Gypsum Wallboard Construction, ASTM C 475.~~

~~**R4411.4.4** Wood studs and wood ceiling supports. Wood studs and wood ceiling supports shall comply with Section R4409.~~

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S5617

Date Submitted	7/24/2012	**Section**	R4408	**Proponent**	Bonnie Manley
Chapter	44	**Affects HVHZ**	Yes	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

Summary of Modification

This proposal, submitted on behalf of the steel industry, recommends the deletion of Section R4408 in favor of a direct reference to the HVHZ provisions in FBC Chapter 22.

Rationale

Rather than try and maintain parallel requirements for steel construction in both the Florida Building Code and the Florida Residential Code, this section simply references users of the residential code to the appropriate HVHZ provisions in the FBC.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No change in cost is anticipated.

Impact to building and property owners relative to cost of compliance with code

No change in cost is anticipated.

Impact to industry relative to the cost of compliance with code

No change in cost is anticipated.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Yes, it does.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Yes, it does.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

No, it does not.

Does not degrade the effectiveness of the code

No, it does not.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5617 Text Modification

Delete Section R4408 in its entirety and replace with the following:

R4408.1 Design, Fabrication and Erection. The design, fabrication and erection of iron and steel for buildings and other structures in high-velocity hurricane zones shall be as set forth in this Section. Structural steel for buildings and other structures shall be in accordance with the additional requirements in FBC Sections 2215 through 2221. Cold-formed members of sheet or strip steel construction shall be in accordance with the additional requirements in FBC Sections 2222 and 2223.

Page: 1

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S6019

Date Submitted	8/2/2012	**Section**	ASTM	**Proponent**	Joseph Belcher
Chapter	45	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

No

Summary of Modification

Updates standards.

Rationale

Updates standards to most recent editions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No cost impact.

Impact to building and property owners relative to cost of compliance with code

No cost impact.

Impact to industry relative to the cost of compliance with code

No cost impact.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

The change updates standards to the most recent editions.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

The change updates standards to the most recent editions.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

The change updates standards to the most recent editions.

Does not degrade the effectiveness of the code

The change updates standards to the most recent editions.

Is the proposed code modification part of a prior code version?

NO

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

ASTM	-	
Standard reference number	Title	Referenced in code section number
C 90-~~06~~ 11b	Specification for Loadbearing Concrete Masonry Units	No Change
C 926-~~98a (2005)~~ 11-a	Specification for Application of Portland Cement-based Plaster	No Change
C 1063-~~06~~ 12a	Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-based Plaster	No Change

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This document is not an ASTM standard and is intended only to provide the user of an ASTM standard an indication of what changes have been made to the previous version. Because it may not be technically possible to adequately depict all changes accurately, ASTM recommends that users consult prior editions as appropriate. In all cases only the current version of the standard as published by ASTM is to be considered the official document.

Designation:C1063-11b Designation: C1063 - 12a

Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster[1]

This standard is issued under the fixed designation C1063; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (′) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This specification covers the minimum requirements for lathing and furring for the application of exterior and interior portland cement-based plaster as in Specification C926 or Specification C841.

1.2 Where a fire resistance rating is required for plastered assemblies and constructions, details of construction shall be in accordance with reports of fire tests of assemblies that have met the requirements of the fire rating imposed.

1.3 Where a specific degree of sound control is required for plastered assemblies and constructions, details of construction shall be in accordance with official reports of tests conducted in recognized testing laboratories in accordance with the applicable requirements of Test Method E90.

1.4 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A641/A641M Specification for ZincCoated (Galvanized) Carbon Steel Wire

A653/A653M Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

B69 Specification for Rolled Zinc

B221 Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes

C11 Terminology Relating to Gypsum and Related Building Materials and Systems

C841 Specification for Installation of Interior Lathing and Furring

C847 Specification for Metal Lath

C926 Specification for Application of Portland Cement-Based Plaster

C933 Specification for Welded Wire Lath

C954 Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness

C1002 Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs

C1032 Specification for Woven Wire Plaster Base

D1784 Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

D4216 Specification for Rigid Poly(Vinyl Chloride) (PVC) and Related PVC and Chlorinated Poly(Vinyl Chloride) (CPVC) Building Products Compounds

E90 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

3. Terminology

3.1 *Definitions*—For definitions relating to Ceilings and Walls, see Terminology C11.

3.2 *Definitions of Terms Specific to This Standard:*

[1] This specification is under the jurisdiction of ASTM Committee C11 on Gypsum and Related Building Materials and Systems and is the direct responsibility of Subcommittee C11.03 on Specifications for the Application of Gypsum and Other Products in Assemblies.

Current edition approved ~~Dec. 1, 2011~~ April 15, 2012. Published ~~January~~May 2012. Originally approved in 1986. Last previous edition approved in 2011 as C1063 - ~~11a~~b. DOI: ~~10.1520/C1063-11B~~10.1520/C1063-12A.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard.**

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3.2.1 *barrier wall*, *n*—type of wall system that is intended to block or interrupt the movement of water to the interior.

3.2.2 *building enclosure*, *n*—system of building assemblies and materials designed and installed in such a manner as to provide a barrier between different environments.

3.2.3 *control joint*, *n*—a joint that accommodates movement of plaster shrinkage and curing along predetermined, usually straight, lines.

3.2.4 *drainage plane*, *n*—surface between the back of the cladding and the front of the water barrier which resists liquid moisture infiltration and provides for gravitational flow to a collection or exhaust location.

3.2.5 *drainage space*, *n*—volumetric area that allows the gravitational flow of liquid moisture to a collection or exhaust location.

3.2.6 *drainage wall*, *n*—a wall system in which the cladding provides a substantial barrier to water intrusion, and which also incorporates a concealed water resistive barrier over which drainage will occur.

3.2.7 *expansion joint*, *n*—a joint that accommodates movement beyond plaster shrinkage and curing.

NOTE 1—For design consideration of control and expansion joints, see Annex A2.3.1.2 of Specification C926.

3.2.8 *framing member*, *n*—studs, joist, runners (track), bridging, bracing, and related accessories manufactured or supplied in wood or light gauge steel.

3.2.9 *hangers*, *n*—wires or steel rods or straps used to support main runners for suspended ceilings beneath floor or roof constructions.

3.2.10 *inserts*, *n*—devices embedded in concrete structural members to provide a loop or opening for attachment of hangers.

3.2.11 *saddle tie*, *n*—see Figs. 1 and 2.

3.2.12 *self-furring*, *adj*—a metal plaster base manufactured with evenly-spaced indentations that hold the body of the lath approximately ¼ in. (6.4 mm) away from solid surfaces to which it is applied.

3.2.13 *water barrier*, *n*—a material that prevents the infiltration of liquid moisture through the building enclosure system.

3.2.14 *water barrier system*, *n*—a combination of water barrier assemblies that prevent the infiltration of liquid moisture through the building enclosure system and facilitates its gravitational flow to a collection or exhaust location.

4. Delivery of Materials

4.1 All materials shall be delivered in the original packages, containers, or bundles bearing the brand-name and manufacturer's (or supplier's) identification.

5. Storage of Materials

5.1 All materials shall be kept dry. Materials shall be stacked off the ground, supported on a level platform, and protected from the weather and surface contamination.

5.2 Materials shall be neatly stacked with care taken to avoid damage to edges, ends, or surfaces.

5.3 Paper backed metal plaster bases shall be handled carefully in delivery, storage, and erection to prevent puncturing or removal of paper.

6. Materials

6.1 *Metal Plaster Bases*:

6.1.1 *Expanded Metal Lath*—Specification C847, galvanized.

6.1.2 *Wire Laths*:

6.1.2.1 *Welded Wire Lath*—Specification C933.

6.1.2.2 *Woven Wire Lath*—Specification C1032.

6.1.2.3 *Paper Backed Plaster Bases*—Specification C847.

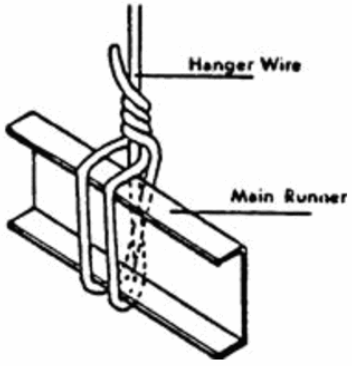


FIG. 1 Saddle Tie

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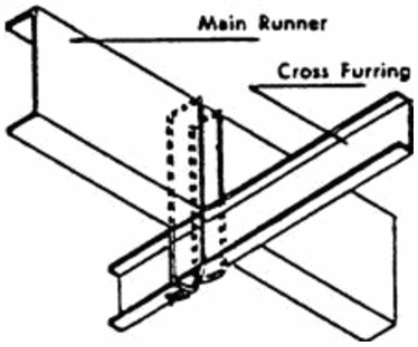


FIG. 2 Saddle Tie

6.2 *Accessories*:

6.2.1 *General*—All accessories shall have perforated or expanded flanges or clips shaped to permit complete embedment in the plaster, to provide means for accurate alignment, and to secure attachment of the accessory to the underlying surface. Accessories shall be designed to receive application of the specified plaster thickness.

6.2.2 Accessories shall be fabricated from Zinc Alloy (99 % pure zinc), galvanized (zinc coated) steel, rigid PVC or CPVC plastic, or anodized aluminum alloy. See Specification B221. (See Table 1 for minimum allowable thicknesses).

NOTE 2—The selection of an appropriate type of material for accessories shall be determined by applicable surrounding climatic and environmental conditions specific to the project location, such as salt air, industrial pollution, high moisture, or humidity.

6.2.3 *Steel*—Specification A653/A653M and shall have a G60 coating.

6.2.4 *PVC Plastic*—Specification D1784 or D4216.

6.2.5 *Zinc Alloy*—Specification B69, 99 % pure zinc.

6.2.6 Thickness of base material shall be as shown in Table 1.

6.2.7 *Cornerite*—1.75 lb/yd^2(0.059 kg/m^2), galvanized expanded metal lath, galvanized, 1.7 lb/yd^2(0.057 kg/m^2) galvanized woven or welded wire fabric of 0.0410 in. (1.04 mm) wire. When shaped for angle reinforcing, it shall have outstanding flanges (legs) of not less than 2 in. (51 mm).

6.3 *Channels*—Shall be cold-formed from steel with minimum 33 000 psi (228 MPa) yield strength and 0.0538 in. (1.37 mm) minimum bare steel thickness. Channel shall have a protective coating conforming to Specification A653/A653M-G60, or have a protective coating with an equivalent corrosion resistance for exterior applications, or shall be coated with a rust inhibitive paint, for interior applications, and shall have the following minimum weights in pounds per 1000 linear feet (kg/m).

Sizes, in. (mm)	Weight, lb/1000 ft (kg/m)	Flange Width, in. (mm)
¾ (19)	277 (0.412)	½ (13)
1½ (38)	414 (0.616)	½ (13)
2 (51)	506 (0.753)	½ (13)
2½ (64)	597 (0.888)	½ (13)

NOTE 3—Channels used in areas subject to corrosive action of salt air shall be hot-dipped galvanized, G60 coating.

6.3.1 *External Corner Reinforcement* —Expanded lath, welded wire, or woven wire mesh bent to approximately 90° used to reinforce portland cement stucco at external corners. This accessory shall be fully embedded in the stucco.

6.3.2 *Weep Screed*—Accessory used to terminate portland cement based stucco at the bottom of exterior framed walls. This accessory shall have a sloped, solid, or perforated, ground or screed flange to facilitate the removal of moisture from the wall cavity and a vertical attachment flange not less than 3½ in. (89 mm) long.

6.4 *Wire*—As specified in Specification A641/A641M with a Class I zinc coated (galvanized), soft temper steel. Wire diameters (uncoated) specified herein correspond with United States Steel Wire Gauge numbers as follows:

TABLE 1 Minimum Thickness of Accessories

Accessory	Base Material, in. (mm)		
	Steel	Zinc Alloy	P.V.C.
Corner Beads	0.0172(0.44)	0.0207(0.53)	0.035(0.89)
Casing Beads	0.0172(0.44)	0.0207(0.53)	0.035(0.89)
Weep Screeds	0.0172(0.44)	0.0207(0.53)	0.050(1.27)
Control Joints	0.0172(0.44)	0.018(0.46)	0.050(1.27)

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Wire Gauge (US Steel Wire Gauge)	Diameter (in.)	mm
No. 20	0.0348	.88
No. 19	0.0410	1.04
No. 18	0.0475	1.21
No. 17	0.0540	1.37
No. 16	0.0625	1.59
No. 14	0.0800	2.03
No. 13	0.0915	2.32
No. 12	0.1055	2.68
No. 11	0.1205	3.06
No. 10	0.1350	3.43
No. 9	0.1483	3.77
No. 8	0.1620	4.12

6.5 *Rod and Strap Hangers*—Mild steel, zinc or cadmium plated, or protected with a rust-inhibiting paint.

6.6 *Clips*—Form from steel wire, Specification A641/A641M zinc-coated (galvanized), Specification A641/A641M or steel sheet, Specification A653/A653M, depending on use and manufacturer's requirements.

6.7 *Fasteners*:

6.7.1 *Nails*—For attaching metal plaster bases to wood supports, 0.1205-in. 11 gauge (3.06-mm) diameter, 7⁄16-in. (11.1-mm) head, barbed, galvanized roofing nails or galvanized common nails.

6.7.1.1 Nails for attaching metal plaster bases to solid substrates shall be not less than 3⁄4 in. (19 mm) long.

6.7.2 Screws for attaching metal plaster base shall be fabricated in accordance with either Specification C954 or C1002 and shall have a 7⁄16 in. (11.1 mm) diameter pan wafer head and a 0.120 in. (3.0 mm) diameter shank. Screws used for attachment to metal framing members shall be self-drilling and self-tapping. Screws used for attachment to wood framing members shall be sharp-point.

7. Installation

7.1 *Workmanship*—Metal furring and lathing shall be erected so that the finished plaster surfaces are true to line (allowable tolerance of 1⁄4 in. [6.4 mm] in 10 ft [3.05 m]), level, plumb, square, or curved as required to receive the specified plaster thickness.

7.2 *Hangers and Inserts*:

7.2.1 Hangers shall be of ample length and shall conform to the requirements of Table 2 both as to size and maximum area to be supported, except as modified in this section.

7.2.2 When 1 by 3⁄16-in. (25 by 4.8-mm) flat inserts and hangers are used, 7⁄16-in. (11.1-mm) diameter holes shall be provided on the center line at the lower end of the insert and upper end of the hanger to permit the attachment of the hanger to the insert. The edge of the holes in both the inserts and the hangers shall be not less than 3⁄8 in. (9.5 mm) from the ends.

7.2.3 In concrete, hangers shall be attached to inserts embedded in the concrete or to other attachment devices designed for this purpose and able to develop full strength of the hanger.

7.2.4 Flat, steel hangers shall be bolted to 1 by 3⁄16-in. (25 by 4.8-mm) inserts with 3⁄8-in. (9.5-mm) diameter round-head stove bolts. (See Fig. 3.)

7.2.5 The nuts of the bolts shall be drawn up tight.

NOTE 4—Hangers required to withstand upward wind pressures shall be of a type to resist compression. Struts of formed channels shall be permitted.

7.3 *Installation of Hangers for Suspended Ceilings Under Wood Constructions*—Hangers shall be attached to supports by any of the following methods:

7.3.1 A hole shall be drilled through the wood member not less than 3 in. (76 mm) above the bottom with the upper end of the wire hanger passed through the hole and twisted three times around itself. See Fig. 4.

7.3.2 Three 12d nails shall be driven, on a downward slant, into the sides of the wood member with not less than 1 1⁄4 in. (31.8 mm) penetration and not less than 5 in. (127 mm) from the bottom edges, and not more than 36 in. (914 mm) on the center with the upper end of the wire hanger wrapped around the nails and twisted three times around itself. See Fig. 5.

7.3.3 A loop shall be formed in the upper end of the wire hanger and secured to the wood member by four 1 1⁄2-in. (38.1-mm), not less than 9 gauge, 0.1483-in. (3.77-mm) diameter wire staples driven horizontally or on a downward slant into the sides of the wood members, three near the upper end of the loop and the fourth to fasten the loose end. See Fig. 6.

7.3.4 Where supports for flooring are thicker than 1 1⁄2 in. (38.1 mm) and are spaced more than 4 ft (1.2 m) on center, 1 1⁄2 in. (38.1-mm) No. 1/0 (0.3065 in.) (7.78 mm) eye screws, or equivalent, spaced not more than 3 ft (0.9 m) on centers shall be screwed into the flooring supports with the upper end of the wire hanger inserted through the eye screws and twisted three times around itself.

7.3.5 Two holes shall be drilled in the upper end of the flat hangers and nailed to the sides of the wood members with 12d nails driven through the holes and clinched. Nails shall be not less than 3 in. (76 mm) above the bottom edge of the framing member. See Fig. 7.

7.4 *Attachment of Hangers to Main Runners*:

7.4.1 Wire hangers shall be saddle-tied to the runners. See Fig. 1.

7.4.2 Smooth or threaded rod hangers shall be fastened to the runners with special attachments appropriate to the design.

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TABLE 2 Allowable Support or Hanger Wire Spacing ft-in. (mm) and Cold-Rolled Channel Main Runner Spans, ft-in. (mm)[1-10]

NOTE—1 in. = 25.4 mm; 1 ft^2 = 0.093 m^2

Member Size, in. (mm)	Member Weight, lb/1000 ft (kg/m)	Span Conditions[9,10]	Uniform Load = 12 psf (0.479 kPa)				
			Member Spacing, in. (mm)				
			24 (610)	36 (914)	48 (1220)	60 (1520)	72 (1830)
			Allowable Hanger Wire or Support Spacing, ft-in. (mm)				
1½	414	Single	3-6 (1070)	3-1 (940)	2-9 (840)	2-9 (790)	2-5 (740)
(38.1)	(0.615)	2 or More	4-11 (1500)	4-2 (1270)	3-7 (1090)	3-2 (970)	2-11 (890)
2	506	Single	3-9 (1140)	3-3 (990)	3-0 (910)	2-9 (840)	2-8 (810)
(50.8)	(0.753)	2 or More	5-2 (1570)	4-6 (1370)	4-1 (1240)	3-10 (1170)	3-7 (1090)
2½	597	Single	3-11 (1190)	3-5 (1040)	3-2 (970)	2-11 (890)	2-9 (840)
(63.5)	(0.888)	2 or More	5-5 (1650)	4-9 (1450)	4-4 (1320)	4.0(1220)	3-10 (1170)
Member Size, in. (mm)	Member Weight, lb/1000 ft (kg/m)	Span Conditions[9,10]	Uniform Load = 15 psf (0.287 kPa)				
			Member Spacing, in. (mm)				
			24 (610)	36 (914)	48 (1220)	60 (1520)	72 (1830)
1½	414	Single	3-3 (990)	2-10 (860)	2-7 (790)	2-4 (710)	2-2 (660)
(38.1)	(0.616)	2 or More	4-6 (1370)	3-8 (1120)	3-2 (970)	2-10 (860)	2-7 (790)
2	506	Single	3-6 (1070)	3-1 (940)	2-10 (880)	2-7 (790)	2-5 (740)
(50.8)	(0.753)	2 or More	4-10 (1470)	4-3 (1300)	3-10 (1170)	3-6 (1070)	3-3 (990)
2½	597	Single	3-8 (1120)	3-3 (990)	2-11 (890)	2-9 (840)	2-7 (790)
(63.5)	(0.888)	2 or More	5-0 (1520)	4-5 (1350)	4-0 (1220)	3.9(1140)	3-6 (1070)

Allowable Spans Notes:
[1] Bare metal thickness of cold-rolled main runners shall be not less than 0.0538 in. (1.367 mm).
[2] Inside corner radii shall not be greater than ⅛ in. (3.19 mm).
[3] Spans based on upper flange of main runners laterally unbraced.
[4] Maximum deflection limited to 1/360 of the span length.
[5] Steel yield stress, Fy, shall be not less than 33 000 psi (228 MPa).
[6] Uniform load 12 psf (dry density) shall be used for portland cement plaster ceilings with plaster thicknesses up to ⅞ in. (22 mm) and 15 psf shall be used for ceilings with plaster thicknesses over ⅞ in. (22 mm) and not more than 1-¼ in. (32 mm).
[7] "2 or More" spans refers to two or more continuous, equal spans.
[8] For the "2 or More" span condition, listed spans represent the center-to-center distance between adjacent supports.
[9] These tables are designed for dead loads. Specific conditions such as exterior installations in high wind areas require additional engineering.
[10] Where uplift resistance is required for suspended ceilings to resist negative forces, the architect or engineer of record shall select the method to be used.

7.4.3 The lower ends of flat hangers shall be bolted to the main runners, or bent tightly around the runners and carried up and above the runners and bolt to the main part of the hanger. Bolts shall be ⅜-in. (9.5-mm) diameter, round-head stove bolts. See Fig. 3.

7.5 *Installation of Main Runners*:

7.5.1 Minimum sizes and maximum spans and spacings of main runners for the various spans between hangers or other supports shall be in accordance with the requirements of Table 2.

7.5.2 A clearance of not less than 1 in. (25 mm) shall be maintained between the ends of the main runners and the abutting masonry or the concrete walls, partitions, and columns. Where special conditions require that main runners let into abutting masonry or concrete construction, within such constructions maintain a clearance of not less than 1 in. (25 mm) from the ends and not less than ¼ in. (6.4 mm) from the tops and sides of the runners.

7.5.3 A main runner shall be located within 6 in. (152 mm) of the paralleling walls to support the ends of the cross furring. The ends of main runners shall be supported by hangers located not more than 6 in. (152 mm) from the ends.

7.5.4 Where main runners are spliced, the ends shall be overlapped not less than 12 in. (305 mm) with flanges of channels interlocked and securely tied near each end of the splice with double loops of 0.0625 in. (1.59 mm) or double loops of twin strands of 0.0475-in. (1.21-mm) galvanized wire. However, when the splice occurs at an expansion/control joint, the channel shall be nested and loosely tied to hold together but still allow movement.

7.5.5 Hanger wires shall hang straight down. If an obstacle prevents this, a trapeze type device shall be used to allow hanger wires to hang straight.

7.6 *Installation of Cross Furring*:

7.6.1 Minimum size and maximum spans and spacings of various types of cross furring for various spans between main runners and supports shall conform to the requirements of Table 2.

7.6.2 Cross furring shall be saddle-tied to main runners with 0.0625-in. 16 gauge (1.59-mm) galvanized wire, or a double strand of 0.0475-in. 18 gauge (1.21-mm) galvanized wire or with special galvanized clips, or equivalent attachments. (See Fig. 2.)

7.6.3 Where cross furring members are spliced, the ends shall be overlapped not less than 8 in. (203 mm), with flanges of channels interlocked, and securely tied near each end of the splice with double loops of 0.0625-in. 16 gauge (1.59-mm) galvanized wire or twin strands of 0.0475-in. 18 gauge (1.21-mm) galvanized wire.

7.6.4 Cross furring shall not come into contact with abutting masonry or reinforced concrete walls or partitions except, where

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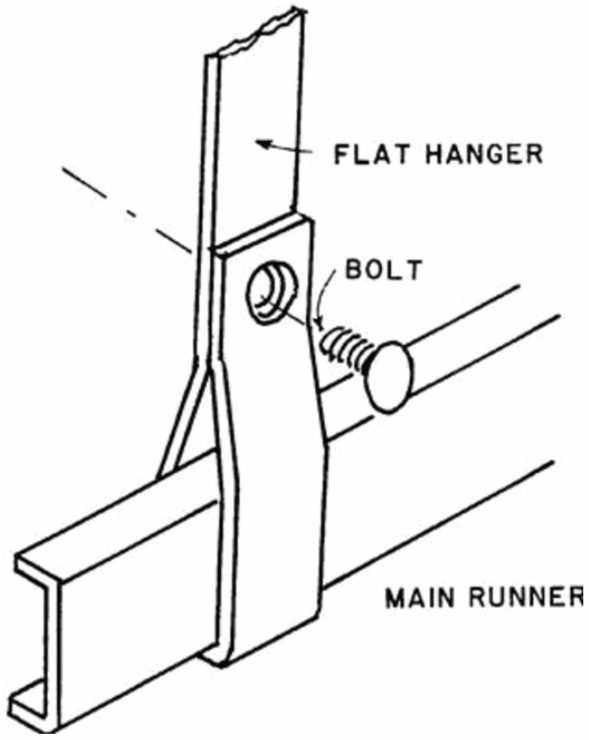


FIG. 3 Flat Hanger Attached to Main Runner Using Round-Head Stove Bolt

special conditions require that cross furring be let into abutting masonry or concrete construction, the applicable provisions of 7.5.2 shall apply.

7.6.5 Main runners and cross running shall be interrupted at control (expansion) joints. However, when the splice occurs at an expansion/control joint, the channel shall be nested and loosely tied to hold together but still allow movement.

7.7 *Metal Furring for Walls*:

7.7.1 Attachments for furring shall be concrete nails driven securely into concrete or into masonry joints, short pieces of ¾-in. (19.1-mm) channels used as anchors driven into masonry joints, or other devices specifically designed as spacer elements, spaced horizontally not more than 2 ft (0.6 m) on centers. They shall be spaced vertically in accordance with horizontal stiffener spacing so that they project from the face of the wall in order for ties to be made.

7.7.2 Horizontal stiffeners shall be not less than ¾ in. (19.5-mm) cold-rolled channels, spaced not to exceed 54 in. (1372 mm) on centers vertically, with the lower and upper channels not more than 6 in. (152 mm) from the ends of vertical members and not less than ¼ in. (6.4 mm) clear from the wall face, securely tied to attachments with three loops of galvanized, soft-annealed wire, or equivalent devices. Approved furring is not prohibited from use in this application.

7.7.3 Vertical members shall be not less than ¾ in. (19.5-mm) cold-rolled channels in accordance with the requirements of Table 3. Vertical members shall be saddle-tied to horizontal stiffeners with three loops of 0.0475-in. (1.21-mm) galvanized soft-annealed wire, or equivalent devices, at each crossing, and securely anchored to the floor and ceiling constructions. Where furring is not in contact with the wall, channel braces shall be installed between horizontal stiffeners and the wall, spaced horizontally not more than 2 ft (600 mm) on centers.

7.7.4 Where dampproofing has been damaged during installation of attachments, the dampproofing shall be repaired with the same material before proceeding with the installation of the furring.

7.8 *Lapping of Metal Plaster Bases*:

7.8.1 Side laps of metal plaster bases shall be secured to framing members. They shall be tied between supports with 0.0475-in. (1.21-mm) wire at intervals not more than 9 in. (229 mm).

7.8.2 Metal lath shall be lapped ½ in. (12.7 mm) at the sides, or nest the edge ribs. Wire lath shall be lapped one mesh at the sides and the ends. Lap metal lath 1 in. (25 mm) at ends. Where end laps occur between the framing members, the ends of the sheets of all metal plaster bases shall be laced or wire tied with 0.0475-in. (1.21-mm) galvanized, annealed steel wire.

7.8.3 Where metal plaster base with backing is used, the vertical and horizontal lap joints shall be backing on backing and metal on metal.

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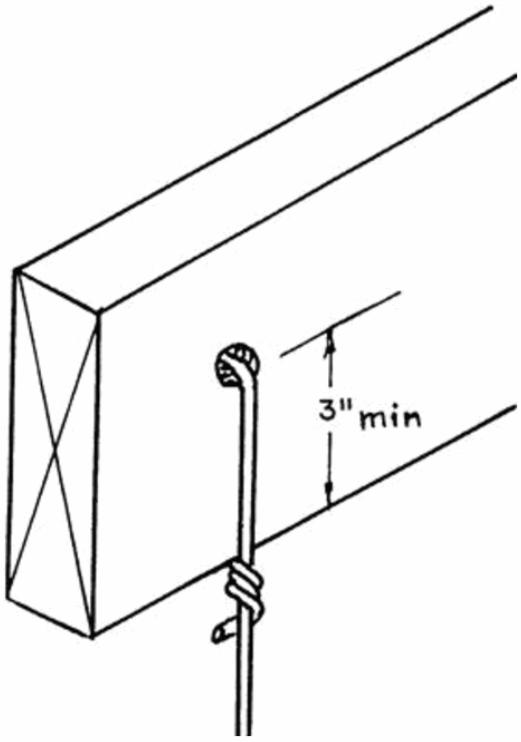


FIG. 4 Hanger Attached to Support Through a Drilled Hole

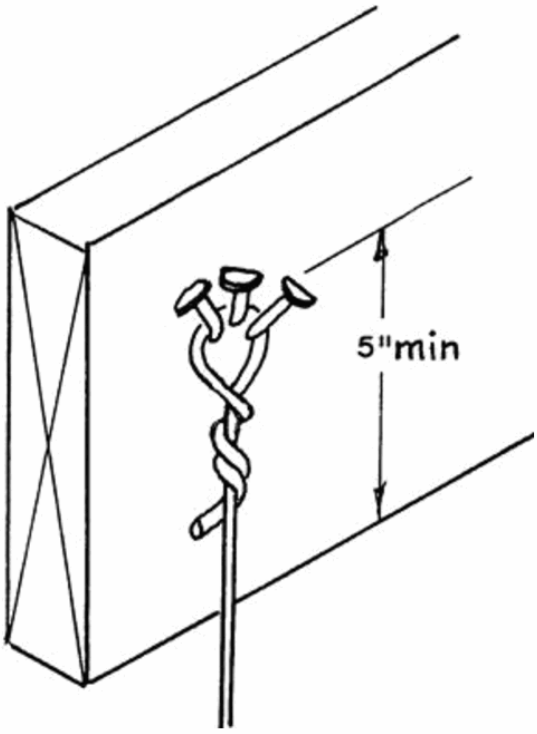


FIG. 5 Hanger Attached to Support Using Nails

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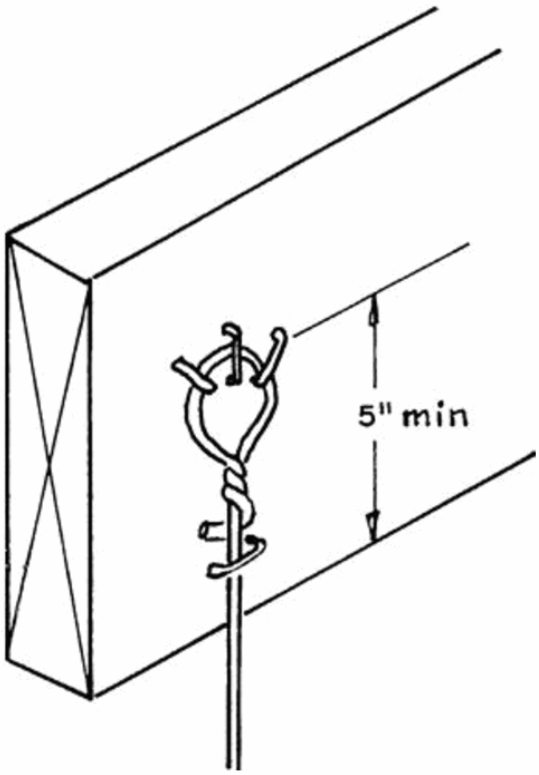


FIG. 6 Hanger Attached to Support Using Staples

7.8.3.1 Backing shall be lapped not less than 2 in. (50 mm). On walls, the backing shall be lapped so water will flow to the exterior. Backing shall not be placed between plaster base (lath) and flanges of accessories. Metal lath to metal flange contact shall be required to ensure that flanges are mechanically locked together.

7.9 *Spacing of Attachments for Metal Plaster Bases*—Attachments for securing metal plaster bases to framing members shall be spaced not more than 7 in. (178 mm) apart for diamond mesh and flat rib laths and at each rib for 3/8 in. (9.5-mm) rib lath.

7.10 *Application of Metal Plaster Bases*:

7.10.1 *General*:

~~7.10.1.1Metal~~7.10.1.1 Metal plaster bases shall be furred away from vertical supports or solid surfaces at least 1/4 in. Self furring lath meets furring requirements; except, furring of expanded metal lath is not required on supports having a bearing surface of 1 5/8 in. or less.

7.10.1.2 The spacing of framing members for the type and weight of metal plaster base used shall conform to the requirements of Table 3. Metal plaster bases shall be attached to framing members at not more than 7 in. (178 mm) on center, along framing members except for 3/8-in. (9.5-mm) rib metal lath that shall be attached at each rib. Attachment penetrations between the framing members shall be avoided (see A1.1).

7.10.1.3 Lath shall be applied with the long dimension at right angles to the supports, unless otherwise specified.

7.10.1.4 Ends of adjoining plaster bases shall be staggered.

7.10.1.5 Lath shall not be continuous through control joints but shall be stopped and tied at each side.

7.10.1.6 Where furred or suspended ceilings butt into or are penetrated by columns, walls, beams, or other elements, the edges and ends of the ceiling lath shall be terminated at the horizontal internal angles with a casing bead, control joint, or similar device designed to keep the edges and ends of the ceiling lath and plaster free of the adjoining vertically oriented, or penetrating elements. Cornerite shall not be used at these locations. A clearance of not less than 3/8 in. (9.5 mm) shall be maintained between the bead and all such elements.

7.10.1.7 Where load bearing walls or partitions butt into structural walls, columns, or floor or roof slabs, the sides or ends of the wall or partition lath shall be terminated at the internal angles with a casing bead, expansion/control joint, or similar device designed to keep the sides and ends of the wall or partition lath free of the adjoining elements. Cornerite shall not be used at these internal angles. A clearance of not less than 3/8 in. (9.5 mm) shall be maintained from all abutting walls, columns, or other vertical elements.

7.10.2 *Attachments for Metal Plaster Bases to Wood Framing Members*:

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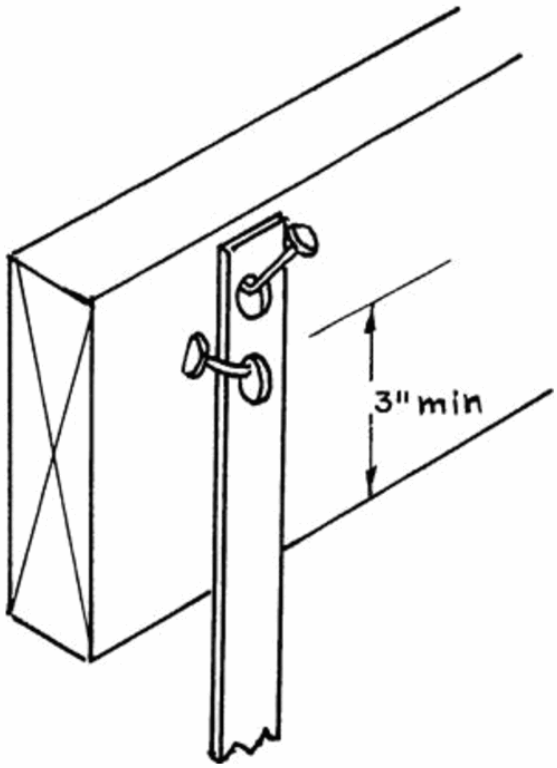


FIG. 7 Flat Hanger Attached to Support Using Nails

TABLE 3 Types and Weights of Metal Plaster Bases and Corresponding Maximum Permissible Spacing of Supports

Type of Metal Plaster Base	Minimum Weight of Metal Plaster Base, lb/yd^2(kg/m^2)	Maximum Permissible Spacing of Supports Center to Center, in. (mm)				
		Walls (Partitions)			Ceilings	
		Wood Studs or Furring	Solid Partitions[A]	Steel Studs or Furring	Wood or Concrete	Metal
U.S. Nominel Weights:						
Diamond Mesh[B]	2.5(1.4)	16(406)[C]	16(406)	16(406)[C]	12(305)	12(305)
	3.4(1.8)	16(406)[C]	16(406)	16(406)[C]	16(406)	16(406)
Flat Rib	2.75(1.5)	16(406)	16(406)	16(406)	16(406)	16(406)
	3.4(1.8)	19(482)	24(610)	19(482)	19(482)	19(482)
Flat Rib (large opening)	1.8(0.95)	24(610)	24(610)	24(610)	16(406)	16(406)
⅜ in. Rib	3.4(1.8)	24(610)	N/A[D]	24(610)	24(610)	24(610)
	4.0(2.1)	24(610)	N/A	24(610)	24(610)	24(610)
¾ in. Rib	5.4(2.9)	24(610)	N/A	24(610)	36(914)	36(914)
Welded Wire[B]	1.14(0.62)	16(406)	16(406)	16(406)	16(406)	16(406)
	1.95(1.1)	24(610)	24(610)	24(610)	24(610)	24(610)
Woven Wire[B]	1.4(0.6)	24(610)	16(406)	16(406)	24(610)	16(406)
Canadian Nominel Weights:						
Diamond Mesh[B]	2.5(1.4)	16(406)	12(305)	12(305)	12(305)	12(305)
	3.0(1.6)	16(406)	12(305)	12(305)	12(305)	12(305)
	3.4(1.8)	16(406)	16(406)	16(406)	16(406)	16(406)
Flat Rib	2.5(1.4)	16(406)	12(305)	12(305)	12(305)	12(305)
	3.0(1.6)	16(406)	16(406)	16(406)	16(406)	13½ (343)
⅜ in. Rib	3.0(1.6)	19(482)	N/A	16(406)	16(406)	16(406)
	3.5(1.9)	24(610)	N/A	19(482)	19(482)	19(482)
	4.0(2.1)	24(610)	N/A	24(610)	24(610)	24(610)

[A] Where plywood is used for sheathing, a minimum of ⅛ in. (3.2 mm) separation shall be provided between adjoining sheets to allow for expansion.
[B] Metal plaster bases shall be furred away from vertical supports or solid surfaces at least ¼ in. Self-furring lath meets furring requirements; except, furring of expanded metal lath is not required on supports having a bearing surface of 1⅝ in. or less.
[C] These spacings are based on unsheathed walls. Where self-furring lath is placed over sheathing or a solid surface, the permissible spacing of supports shall be no more than 24 in. (610 mm).
[D] Not applicable.

7.10.2.1 Lath shall be attached to framing members with attachments spaced not more than 7 in. (178 mm) on centers along supports.

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TABLE 4 Spans and Spacing of Cold-Rolled Channel Cross-Furring Members[A, B, C, D, E, F]

Design Load, 12 psf (575 Pa)		Allowable Span, Main Runners or Supports Ft-in. (mm)	
Member Depth	Spacing, in. (mm)	Simple Span	Two or More Spans[G,H]
¾ (19)	13.5 (343)	2-9 (840)	3-5 (1040)
	16 (406)	2-7 (790)	3-3 (990)
	19 (483)	2-7 (740)	3-0 (910)
	24 (610)	2-3 (690)	2-10 (860)
1½ (38)	13.5 (343)	4-6 (1370)	5-8 (1730)
	16 (406)	4-3 (1300)	5-5 (1650)
	19 (483)	4-0 (1220)	5-1 (1550)
	24 (610)	3-8 (1120)	4-9 (1450)

[A] Bare metal thickness of cold-rolled members shall not be less than 0.0538 in. (1.367 mm).
[B] Inside corner radii shall not be greater than ⅛ in. (3.17 mm).
[C] Spans based on upper flange of cross-furring laterally unbraced.
[D] Maximum deflection limited to 1/360th of span length unbraced.
[E] Steel yield stress, *Fy*, shall not be less than 33 000 psi (228 MPa).
[F] Tabulated spans apply only to cross-furring with webs oriented vertically.
[G] "Two or more" spans refers to two or more continuous, equal spans.
[H] For the "two or more" span conditions, listed spans represent the center-to-center distance between adjacent supports.

7.10.2.2 Diamond-mesh expanded metal lath, flat-rib expanded metal lath, and wire lath shall be attached to horizontal wood framing members with 1½-in. (38.1-mm) roofing nails driven flush with the plaster base and attached to vertical wood framing members with 6d common nails, or 1-in. (25-mm) roofing nails driven to a penetration of not less than ¾ in. (19.1 mm), or 1-in. (25-mm) wire staples driven flush with the plaster base. Staples shall have crowns not less than ¾ in. (19.05 mm) and shall engage not less than three strands of lath and penetrate the wood framing members not less than ¾ in. (19.05 mm). When metal lath is applied over sheathing, use fasteners that will penetrate the structural members not less than ¾ in. (19 mm).

7.10.2.3 Expanded ⅜ in. (9.5 mm) rib lath shall be attached to horizontal and vertical wood framing members with nails or staples to provide not less than 1¾-in. (44.5-mm) penetration into horizontal wood framing members, and ¾-in. (19.1-mm) penetration into vertical wood framing members.

7.10.2.4 Common nails shall be bent over to engage not less than three strands of lath, or be bent over a rib when rib lath is installed.

7.10.2.5 Screws used to attach metal plaster base to horizontal and vertical wood framing members shall penetrate not less than ⅝ in. (15.9 mm) into the member when the lath is installed and shall engage not less than three strands of lath. When installing rib lath, the screw shall pass through, but not deform, the rib.

7.10.3 *Attachments for Metal Plaster Bases to Metal Framing Members*:

7.10.3.1 Except as described in 7.10.3.2, all metal plaster bases shall be securely attached to metal framing members with 0.0475-in. 18 gauge (1.21-mm) wire ties, clips or by other means of attachment which afford carrying strength and resistance to corrosion equal to or superior to that of the wire.

7.10.3.2 Rib metal lath shall be attached to open-web steel joists by single ties of galvanized, annealed steel wire, not less than 0.0475 in. (1.21 mm), with the ends of each tie twisted together 1½ times.

7.10.3.3 Screws used to attach metal plaster base to metal framing members shall project not less than ⅜ in. (9.5 mm) through the metal framing member when the lath is installed and shall engage not less than three strands of lath. When installing rib lath, the screw shall pass through, but not deform, the rib.

7.10.4 *Attachments for Metal Plaster Bases to Concrete Joists*—Rib metal lath shall be attached to concrete joists by loops of 0.0800-in. (2.03-mm) galvanized, annealed steel wire, with the ends of each loop twisted together.

7.10.5 Metal plaster bases shall be attached to masonry or concrete with power or powder actuated fasteners or a combination of power or powder actuated fasteners and hardened concrete stub nails. One power or powder actuated fastener shall be located at each corner and one at the mid point of the long dimension adjacent to the edge of the metal plaster base sheet. The balance of the sheet shall be fastened with power or powder actuated fasteners or hardened concrete stub nails. The fasteners shall be installed in rows not more than 16 in. (406 mm) on center and spaced vertically along each row not more 7 in. (178 mm) on center. All fasteners shall be corrosion resistant and shall be not less than ¾ in. (19 mm) long, with heads not less than ⅜ in. (9.5 mm) wide.

7.11 *Application of Accessories* :

7.11.1 *General*—All metal accessories shall be installed in such a manner than flanges and clips provided for their attachment are completely embedded in the plaster.

7.11.1.1 Accessories shall be attached to substrate in such a manner as to ensure proper alignment during application of plaster. Flanges of accessories shall be secured at not more than 7 in. (178 mm) intervals along supports.

7.11.2 *Corner Beads*—Corner beads shall be installed to protect all external corners and to establish grounds.

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7.11.2.1 *External Corner Reinforcement* —External corner reinforcement shall be installed to reinforce all external corners where corner bead is not used. Where no external corner reinforcement or corner bead is used, lath shall be furred out and carried around corners not less than one support on frame construction.

7.11.3 *Casing Beads*—Nonload-bearing members shall be isolated from load-bearing members, and all penetrating elements, with casing beads or other suitable means, to avoid transfer of structural loads, and to separate from dissimilar materials.

7.11.4 *Control Joints-General*—Control joints shall be formed by using a single prefabricated member or fabricated by installing casing beads back to back with a flexible barrier membrane behind the casing beads. The separation spacing shall be not less than $\frac{1}{8}$ in. (3.2 mm) or as required by the anticipated thermal exposure range and shall be in conformance with 7.10.1.5.

7.11.4.1 *Control Joints*—Control (expansion and contraction) joints shall be installed in walls to delineate areas not more than 144 ft^2(13.4 m^2) and to delineate areas not more than 100 ft^2(9.30 m^2) for all horizontal applications, that is, ceilings, curves, or angle type structures.

7.11.4.2 The distance between control joints shall not exceed 18 ft (5.5 m) in either direction or a length-to-width ratio of $2\frac{1}{2}$ to 1. A control joint shall be installed where the ceiling framing or furring changes direction.

7.11.4.3 A control joint shall be installed where an expansion joint occurs in the base exterior wall.

7.11.4.4 Wall or partition height door frames shall be considered as control joints.

7.11.5 *Foundation Weep Screed*—Foundation weep screed shall be installed at the bottom of all steel or wood framed exterior walls to receive lath and plaster. Place the bottom edge of the foundation weep screed not less than 1 in. (25 mm) below the joint formed by the foundation and framing. The nose of the screed shall be placed not less than 4 in. (102 mm) above raw earth or 2 in. (51 mm) above paved surfaces. The weather resistive barrier and lath shall entirely cover the vertical attachment flange and terminate at the top edge of the nose or ground flange.

8. Keywords

8.1 ceiling; expansion control joints; lath; plaster; screed; suspended ceiling; walls

ANNEX

(Mandatory Information)

A1. GENERAL INFORMATION

A1.1 All wood-based sheathing shall be installed with a minimum $\frac{1}{8}$-in. (3.2-mm) gap around all panel edges and between openings for doors and windows.

NOTE A1.1—This $\frac{1}{8}$-in. (3.2-mm) gap is intended to accommodate expansion. Linear expansion that is not accommodated by an expansion gap can cause stress on the stucco membrane resulting in stucco cracks.

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A1.2 **Expansion Joints** shall be used to accommodate some degree of movement in the stucco membrane caused by movement of the building or its components to minimize damage to the stucco and weather resistive barrier. **Control Joints** shall be installed to minimize stress due to stucco curing and drying shrinkage and minor movement, along predetermined, usually straight lines and as a screed to aid in stucco thickness control.

SUMMARY OF CHANGES

Committee C11 has identified the location of selected changes to this specification since the last issue, C1063 - 11ab, that may impact the use of this specification. (Approved Dec. 1, 2011)April 15, 2012.)

(*1*)Added 7.10.1.1 and renumbered subsequent sections.) Revised 7.10.1.2 and added the term *water barrier* to the terminology section.

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Designation: C90 11b

Standard Specification for Loadbearing Concrete Masonry Units'

This standard is issued under the fixed designation C90; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (e) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This specification covers hollow and solid (see 5.3 and 5.4) concrete masonry units made from hydraulic cement, water, and mineral aggregates with or without the inclusion of other materials. There are three classes of concrete masonry units: (1) normal weight, (2) medium weight, and (3) lightweight. These units are suitable for both loadbearing and nonloadbearing applications.

1.2 Concrete masonry units covered by this specification are made from lightweight or normal weight aggregates, or both.

1.3 The text of this specification references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

1.4 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

NoTn 1-When particular features are desired such as surface textures for appearance or bond, finish, color, or particular properties such as density classification, higher compressive strength, fire resistance, thermal performance or acoustical performance, these features should be specified separately by the purchaser. Suppliers should be consulted as to the availability of units having the desired features.

2. Referenced Documents

2.1 ASTM Standards:2

C33 Specification for Concrete Aggregates

C140 Test Methods for Sampling and Testing Concrete Masonry Units and Related Units

C150 Specification for Portland Cement

C331 Specification for Lightweight Aggregates for Concrete Masonry Units

C426 Test Method for Linear Drying Shrinkage of Concrete Masonry Units

C595 Specification for Blended Hydraulic Cements

C618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

C979 Specification for Pigments for Integrally Colored Concrete

C989 Specification for Slag Cement for Use in Concrete and Mortars

C1157 Performance Specification for Hydraulic Cement

C1232 Terminology of Masonry

C1240 Specification for Silica Fume Used in Cementitious Mixtures

C1314 Test Method for Compressive Strength of Masonry Prisms

E519 Test Method for Diagonal Tension (Shear) in Masonry Assemblages

E72 Test Methods of Conducting Strength Tests of Panels for Building Construction

3. Terminology

3.1 Terminology defined in Terminology C1232 shall apply for this specification.

4. Materials

4.1 Cementitious Materials-Materials shall conform to the following applicable specifications:

4.1.1 *Portland* Cement-Specification C150.

4.1.2 Modified Portland Cement-Portland cement conforming to Specification C150, modified as follows:

(1) Limestone-If calcium carbonate is added to the cement, the CaCO3 content shall not be less than 85 %.

(2) Limitation on Insoluble Residue-1.5 %.

(3) Limitation on Air Content of Mortar-Volume percent, 22 % max.

(4) Limitation on Loss on Ignition-7 %.

4.1.3 *Blended Hydraulic* Cements-Specification C595.

4.1.4 Hydraulic Cement-Specification C 1157.

4.1.5 Pozzolans-Specification C61 8.

' This specification is under the jurisdiction of ASTM Committee Cl 15 on Manufactured Masonry Units and is the direct responsibility of Subcommittee 015.03 on Concrete Masonry Units and Related Units.

Current edition approved Dec. 15, 2011. Published January 2012. Originally approved in 1931. Last previous edition approved in 2011 as C90 11a. DOI: 10.1520/00090-11B.

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*A Summary of Changes section appears at the end of this standard.

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4.1.6 *Blast Furnace Slag* Cement-Specification C989.

4.1.7 Silica Fume-Specification C1240.

4.2 Aggregates-Aggregates shall conform to the following specifications, except that grading requirements shall not necessarily apply:

4.2.1 Normal Weight Aggregates-Specification C33.

4.2.2 Lightweight Aggregates-Specification C33 1.

4.3 Pigments for Integrally Colored Concrete- Specification C979.

4.4 Other Constituents-Air-entraining agents, integral water repellents, and other constituents shall be previously established as suitable for use in concrete masonry units and shall conform to applicable ASTM standards or shall be shown by test or experience not to be detrimental to the durability of the concrete masonry units or any material customarily used in masonry construction.

5. Physical Requirements

5.1 At the time of delivery to the purchaser, units shall conform to the physical requirements prescribed in Table I and Table 2. All units shall be sound and free of cracks or other defects that interfere with the proper placement of the unit or significantly impair the strength or permanence of the construction. Minor cracks, incidental to the usual method of manufacture or minor chipping resulting from customary methods of handling in shipment and delivery, are not grounds for rejection.

NOTE 2-Higher compressive strengths than those listed in Table 2 may be specified where required by design. Consult with suppliers to determine availability of units of higher compressive strength.

NOTE 3-Oven-dry densities of concrete masonry units generally fall within the range of 85 to 145 lbf/ft3 (1360 to 2320 kg/m3). Because available densities will vary, suppliers should be consulted before specifying project requirements.

5.1.1 When higher compressive strengths than those listed in Table 2 are specified, the tested average net area compressive strength of three units shall equal or exceed the specified compressive strength, and the tested individual unit net area compressive strength of all three units shall exceed 90 % of the specified compressive strength.

5.2 At the time of delivery to the purchaser, the linear shrinkage of units shall not exceed 0.065 %.

NOTE 4-The purchaser is the public body or authority, association, corporation, partnership, or individual entering into a contract or agreement to purchase or install, or both, concrete masonry units. The time of delivery to the purchaser is FOB plant when the purchaser or the purchaser's agent transports the concrete masonry units, or at the time unloaded at the worksite if the manufacturer or the manufacturer's agent transports the concrete masonry units.

5.3 *Hollow Units:*

5.3.1 Face shell thickness (tfs) and web thickness (tw) shall conform to the requirements prescribed in Table 1.

NOTE 5-Web thickness (tw) not conforming to the requirements prescribed in Table I may be approved, provided equivalent structural capability has been established when tested in accordance with the applicable provisions of Test Methods E72, C1314, E519, or other applicable tests and the appropriate design criteria developed is in accordance with applicable building codes.

5.4 Solid Units:

5.4.1 The net cross-sectional area of solid units in every plane parallel to the bearing surface shall be not less than 75 % of the gross cross-sectional area measured in the same plane.

5.5 *End Flanges:*

5.5.1 For units having end flanges, the thickness of each lfange shall not be less than the minimum face shell thickness.

NOTE 6-Flanges beveled at the ends for mortarless head joint applications that will be filled with grout are exempt from this requirement. Flanges which are specially shaped for mortarless head joint applications which have been shown by testing or field experience to provide equivalent performance are exempt from this requirement.

6. Permissible Variations in Dimensions

6.1 *Standard Units-For* standard units, no overall dimension (width, height, and length) shall differ by more than ±1/s in. (3.2 mm) from the specified dimensions.

6.2 Particular Feature Units-For particular feature units, dimensions shall be in accordance with the following:

6.2.1 For molded face units, no overall dimension (width, height, and length) shall differ by more than -±'/s in. (3.2 mm) from the specified standard dimension. Dimensions of molded features shall be within ±1A6 in. (1.6 mm) of the specified standard dimensions and shall be within ±1/16 in. (1.6 mm) of the specified placement of the molded feature.

NOTE 7-Molded features include, but are not limited to: ribs, scores, hex-shapes, and patterns.

6.2.2 For split-faced units, all non-split overall dimensions shall differ by not more than +1/8 in. (3.2 mm) from the specified standard dimensions.

6.2.3 For slump units, no overall height dimension shall differ by more than ±1/s in. (3.2 mm) from the specified standard dimension.

TABLE 1 Minimum Face Shells and Web Requirements"

Nominal Width (W) of Units, in. (mm)	Face Shell Thickness (ts), min, in. (mm)8•c	Webs	
		Web Thickness° (t_w), min, in. (mm)	Normalized Web Area (A_w), min in.2/ft2 (mm2/m2)°
3 (76.2) and 4 (102)	3/a (19)	a /4 (19)	6.5 (45,140)
6 (152)		3/4 (19)	6.5 (45,140)
8 (203) and greater	1%( ) (32	/4 (19)	6.5 (45,140)

A e Average of measurements on a minimum of 3 units wh en measured as described in Test Methods C140.

When this standard is used for units having split surfaces, a maximum of 10 % of the split surface is permitted to have thickness less than those shown, but not less than 3/4 in. (19.1 mm). When the units are to be solid grouted, the 10 % limit does not apply and Footnote C establishes a thickness requirement for the entire fecesheli.

When the units are to be solid grouted, minimum face shell and web thickness shall be not less than 1/13 in. (16 mm).

° M inimum normalized web area does not apply to the portion of the unit to be filled with grout. The length of that portion shall be deducted from the overall length of the unit for the calculation of the minimum web cross-sectional area.

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TABLE 2 Strength, Absorption, and Density Classification Requirements

Density Classification	Oven-Dry Density of Concrete, lb/ft3(kg/m3)	Maximum Water Absorption, lb/ft3(kg/m3)		Minimum Net Area Compressive Strength, lb/in2(MPa)	
	Average of 3 Units	Average of 3 Units	Individual Units	Average of 3 Units	Individual Units
Lightweight	Less than 105 (1680)	18 (288)	20 (320)	1900 (13.1)	1700 (11.7)
Medium Weight	105 to less than 125 (1680-2000)	15 (240)	17 (272)	1900 (13.1)	1700 (11.7)
Normal Weight	125 (2000) or more	13 (208)	15 (240)	1900 (13.1)	1700 (11.7)

NOTE 8-On faces that are split or slumped, overall dimensions will vary. Consult with suppliers to determine achievable dimensional tolerances for products including these features.

7. Finish and Appearance

7.1 Where units are to be used in exposed wall construction, the face or faces that are to be exposed shall not show chips or cracks, not otherwise permitted, or other imperfections when viewed from a distance of not less than 20 ft (6.1 m) under diffused lighting.

7.1.1 Five percent of a shipment containing chips, not larger than 1 in. (25.4 mm) in any dimension, or cracks not wider than 0.02 in. (0.5 mm) and not longer than 25 % of the nominal height of the unit, is permitted.

7.2 The color and texture of units shall be specified by the purchaser. The finished surfaces that will be exposed in place shall conform to an approved sample, consisting of not less than four units, representing the range of texture and color permitted.

NOTE 9-Concrete masonry units are produced using a wide variety of natural aggregates and other materials. As such, slight variations inherent from natural materials should be expected. Since specifying units and approving samples can take place several months prior to production of actual units for a project, slight variations in appearance from the approved sample are to be expected.

7.3 A shipment shall not contain more than 5 % of units, including broken units, that do not meet the requirements of 6.1, 7.1, and 7.1.1.

8. Sampling and Testing

8.1 The purchaser or authorized representative shall be accorded proper facilities to inspect and sample the units at the place of manufacture from the lots ready for delivery.

8.2 Sample and test units in accordance with Test Methods C140.

8.3 Total linear drying shrinkage shall be based on tests of concrete masonry units made with the same materials, concrete mix design, manufacturing process, and curing method, conducted in accordance with Test Method C426 and not more than 24 months prior to delivery.

9. Compliance

9.1 If a sample fails to conform to the specified requirements, the manufacturer shall be permitted to remove units from the shipment. A new sample shall be selected by the purchaser from remaining units from the shipment with a similar configuration and dimension and tested. If the second sample meets the specified requirements, the remaining portion of the shipment represented by the sample meets the specified requirements. If the second sample fails to meet the specified requirements, the remaining portion of the shipment represented by the sample fails to meet the specified requirements.

NOTE 10-Unless otherwise specified in the purchase order, the cost of tests is typically borne as follows: (1) if the results of the tests show that the units do not conform to the requirements of this specification, the cost is typically borne by the seller; (2) if the results of the tests show that the units conform to the specification requirements, the cost is typically borne by the purchaser.

10. Keywords

10.1 absorption; compressive strength; concrete masonry units; equivalent web thickness; face shell; flange; lightweight; linear drying shrinkage; loadbearing; medium weight; normal weight; webs

APPENDIXES

(Nonmandatory Information)

X1. WATER PENETRATION RESISTANCE

X1.1 Exterior walls are often subjected to moisture penetration from one or more sources. For example, basement walls may be exposed to water from saturated soil. Above-grade exterior walls are usually exposed to wind-driven rain. To prevent water penetration, proper detailing, construction, flashing, and drainage should be provided. Proper water penetration resistant treatments should be applied to the walls. While it is not within the scope of Specification C90 to include information on resistance to water penetration, such information and guidelines are available from other organizations.

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X2. CRACK CONTROL

X2.1 Restrained or differential movement in building elements and building materials can result in cracking. Some common causes of movement are: loads created by wind, soil pressure, seismic forces, or other external sources; settlement of foundations; or volume changes in materials. For example, volume changes in concrete masonry units can be caused by moisture gain and loss, thermal expansion and contraction, and carbonation. To limit and control cracking due to these and other causes, proper design, detailing, construction, and materials are necessary. Specification C90 provides a maximum limitation on the total linear drying shrinkage potential of the units, but it is not within the scope of this specification to address other design, detailing, construction, or material recommendations. This type of information and related guidelines for crack control are available from other organizations.

SUMMARY OF CHANGES

Committee C15 has identified the location of selected changes to this standard since the last issue (C90 11a) that may impact the use of this standard. (Approved Dec. 15, 2011.)

(1) References to Specifications C979 and C 1.240 have been added for pigments and silica fume, respectively.

(2) The minimum web thickness and equivalent web thickness requirements of Table 1 were revised.

Committee C15 has identified the location of selected changes to this standard since the last issue (C90 11) that may impact the use of this standard. (Approved June 1, 2011.)

(1) Added new Note 9.

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Designation: C926 - 11a

Standard Specification for Application of Portland Cement-Based Plaster[1]

This standard is issued under the fixed designation C926; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This specification covers the requirements for the application of full thickness portland cement-based plaster for exterior (stucco) and interior work.

1.2 This specification sets forth tables for proportioning of various plaster mixes and plaster thickness.

NOTE 1—General information will be found in Annex A1. Design considerations will be found in Annex A2.

1.3 The values stated in inch-pound units are to be regarded as the standard. The SI (metric) values given in parentheses are approximate and are provided for information purposes only.

1.4 The text of this specification references notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the specification.

1.5 Details of construction for a specific assembly to achieve the required fire resistance shall be obtained from reports of fire-resistance tests, engineering evaluations, or listings from recognized fire testing laboratories.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C11 Terminology Relating to Gypsum and Related Building Materials and Systems
C25 Test Methods for Chemical Analysis of Limestone, Quicklime, and Hydrated Lime
C35 Specification for Inorganic Aggregates for Use in Gypsum Plaster
C91 Specification for Masonry Cement
C150 Specification for Portland Cement
C206 Specification for Finishing Hydrated Lime
C207 Specification for Hydrated Lime for Masonry Purposes
C219 Terminology Relating to Hydraulic Cement
C260 Specification for Air-Entraining Admixtures for Concrete
C595 Specification for Blended Hydraulic Cements
C631 Specification for Bonding Compounds for Interior Gypsum Plastering
C897 Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters
C932 Specification for Surface-Applied Bonding Compounds for Exterior Plastering
C1063 Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster
C1116 Specification for Fiber-Reinforced Concrete and Shotcrete
C1328 Specification for Plastic (Stucco) Cement
E90 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
E119 Test Methods for Fire Tests of Building Construction and Materials
E492 Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine

2.2 *ANSI Standard:*

A108.1 Specification for Installation of Ceramic Tile[3]

3. Terminology

3.1 Terms shall be defined as in Terminologies C11 and C219, except as modified herein.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *accelerator*—an admixture that will shorten the setting time of plaster.

3.2.2 *admixture*—a material other than water, aggregate, or basic cementitious material added to the batch before or during job mixing.

[1] This specification is under the jurisdiction of ASTM Committee C11 on Gypsum and Related Building Materials and Systems and is the direct responsibility of Subcommittee C11.03 on Specifications for the Application of Gypsum and Other Products in Assemblies.

Current edition approved Oct. 1, 2011. Published November 2011. Originally approved in 1981. Last previous edition approved in 2011 as C926-11. DOI: 10.1520/C0926-11A.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

***A Summary of Changes section appears at the end of this standard.**

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3.2.3 *acid etching*—the cleansing and controlled erosion of a solid surface, using an acid wash.

3.2.4 *air entrainment*—the use of an air-entraining admixture or air-entraining cementitious material in a plaster mix to yield a controlled quantity of minute (typically between 10 and 1000 µm in diameter) disconnected air bubbles in the plaster (see *entrapped air*).

3.2.5 *backplaster*—plaster applied to the face of metal lath opposite a previously applied plaster.

3.2.6 *bond*—the state of adhesion between plaster coats or between plaster and plaster base.

3.2.7 *bonding compound or agent*—compounds surface applied or integrally mixed with plaster to improve the quality of bond between plaster and plaster base or between plaster coats.

3.2.8 *cementitious material*—a material that, when mixed with water and with or without aggregate, provides the plasticity and the cohesive and adhesive properties necessary for placement and the formation of a rigid mass.

3.2.9 *coat*—a thickness of plaster applied in a single operation.

3.2.9.1 *basecoat*—all plaster applied before the application of the finish coat.

3.2.9.2 *bedding coat*—a plaster coat that receives aggregate or other decorative material impinged into its surface before it sets.

3.2.9.3 *brown coat*—in three-coat work, the second coat, applied over the scratch coat. In two-coat work, brown coat refers to the double-up basecoat. In either use, the brown coat is the coat directly beneath the finish coat.

3.2.9.4 *dash-bond coat*—a thick wet mixture of portland cement and water, with or without aggregate, dashed onto the surface of a plaster base such as smooth monolithic concrete or concrete block surfaces to improve the mechanical key for subsequent plaster coats.

3.2.9.5 *double-up coat*—the brown-coat plaster applied to the scratch coat plaster before the scratch-coat plaster has set.

3.2.9.6 *finish coat*—the final layer of plaster applied over basecoat plaster.

3.2.9.7 *fog coat*—a light coat of cement and water, with or without aggregate or color pigment, applied by machine spray to improve color consistency.

3.2.9.8 *scratch coat*—the first coat of plaster applied to a plaster base.

3.2.9.9 *skim coat*—a thin finish coat applied to an existing plaster surface or other substrate to improve appearance.

3.2.9.10 *three-coat work*—application of plaster in three successive coats with time between coats for setting or drying, or both.

3.2.10 *cold joint ("joining" or "jointing")*—the juncture of fresh plaster application adjacent to set plaster, in the same plane.

3.2.11 *curing*—the act or processes of producing a moisture environment favorable to cement hydration, resulting in the setting or hardening of the plaster.

3.2.12 *entrapped air*—unintentional air voids in the plaster generally larger than 1 mm.

3.2.13 *factory prepared ("mill-mixed" or "ready mixed")*—pertaining to material combinations that have been formulated and dry-blended by the manufacturer, requiring only the addition of and mixing with water to produce plaster.

3.2.14 *fiber, natural or synthetic*—an elongated fiber or strand admixture added to plaster mix to improve cohesiveness or pumpability, or both.

3.2.15 *floating*—act of compacting and leveling brown-coat plaster to a reasonably true surface plane using a float tool or the act of bringing the aggregate to the surface of finish-coat plaster.

3.2.16 *key (also mechanical key)*—plaster that physically surrounds, penetrates, or deforms to lock onto the perforations or irregularities of the plaster base or previous coat of plaster.

3.2.17 *metal plaster base*—expanded metal lath, or welded or woven wire lath.

3.2.18 *plaster*—portland cement-based cementitious mixture (see *stucco*).

3.2.19 *required*—pertaining to a mandatory obligation imposed by a force outside of this specification, such as a building code, project specification, contract, or purchase order.

3.2.20 *rustication (also "break")*—an interruption or change in plane of a plastered surface.

3.2.21 *scoring (also known as "scratching")*—the grooving of the surface of an unset plaster coat to provide a key for a subsequent coat.

3.2.22 *set*—the chemical and physical change in plaster as it goes from a plastic, workable state to a rigid state.

3.2.23 *solid plaster bases, n*—substrates that do not require a metal plaster base, including cast in place and precast concrete, concrete and stone masonry, clay brick, and tile.

3.2.24 *stucco*—portland cement-based plaster used on exterior locations.

3.2.25 *stucco finish*—a factory-prepared, dry blend of materials for finish coat applications.

3.2.26 *temper, v*—to mix or restore unset plaster with water to a workable consistency.

3.2.27 *texture*—any surface appearance as contrasted to a smooth surface.

4. Materials

4.1 Materials shall conform to the requirements of the referenced specifications and standards and to the requirements specified herein.

4.2 *Cement*:

4.2.1 *Portland Cement*—Specification C150, Type I, II, and III, as specified. White where specified.

4.2.2 *Air-Entraining Portland Cement*—Specification C150, type as specified. White where specified.

4.2.3 *Masonry Cement*—Specification C91, Types N, S, and M. White where specified.

4.2.4 *Blended Hydraulic Cement*—Specification C595, Type IP, I(PM), IS, and I(SM) as specified.

4.2.5 *Air-Entraining Blended Hydraulic Cement*—Specification C595, Type IP-A, I(PM)-A, IS-A, and I(SM)-A as specified.

4.2.6 *Plastic Cement*—Plastic Cement shall meet the requirements of Specification C1328, Standard Specification for Plastic (Stucco) Cement.

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NOTE 2—Plastic cements are not available nationally.

4.3 *Type "S" Hydrated Lime*—A hydrated lime that contains not more than 8 % unhydrated oxides when tested in accordance with Test Methods C25. See Specifications C206 and C207 for a complete description of a Type "S" hydrated lime.

4.4 *Aggregates*:

4.4.1 *Sand for Base Coats*—Specification C897. Aggregate failing to meet gradation limits in Specification C897 shall be permitted to be used, provided the plaster made with this sand has an acceptable demonstrated performance record in similar construction and climate conditions.

4.4.2 *Perlite*—Specification C35.

4.4.3 *Sand for Job-Mixed Finish Coats*—Specification C897.

4.5 *Water*—Water used in mixing, application, and finishing of plaster shall be clean, fresh, suitable for domestic water consumption, and free of such amounts of mineral or organic substances as would affect the set, the plaster, or any metal in the system.

4.6 *Admixtures*—See 3.2.2 and A2.5.

4.7 *Fibers*—Specification C1116 on alkali-resistant fibers, glass fibers, nylon, polypropylene or carbon fibers.

5. Requirements for Bases to Receive Portland Cement-Based Plaster

5.1 Metal bases and accessories used to receive plaster shall be installed in conformance with Specification C1063, except as otherwise specified.

NOTE 3—All metal, or PVC, or CPVC plastic members should be free of deleterious amounts of rust, oil, or other foreign matter, which could cause bond failure or unsightly discoloration.

5.2 Surfaces of solid bases to receive plaster, such as masonry, stone, cast-in-place or precast concrete shall be straight and true within ¼ in. in 10 ft (2.1 mm/m) and shall be free of form oil or other elements, which would interfere with bonding. Conditions where the surfaces are out of tolerance shall be corrected prior to the application of the plaster. Form ties or other obstructions shall be removed or trimmed back even with the surface of the solid base.

5.2.1 Solid surfaces shall have the suction (ability to absorb water) or surface roughness, or both, to provide the bond required for the plaster.

5.2.2 Smooth or nonabsorbent solid surfaces, such as cast-in-place or precast concrete, shall be prepared to receive portland cement plaster by one of the following methods:

5.2.2.1 Sandblasting, wire brushing, acid etching, or chipping or a combination thereof,

5.2.2.2 Application of a dash-bond coat applied forcefully against the surface, left untroweled, undisturbed, and moist cured for at least 24 h, or

5.2.2.3 Application of a bonding compound suitable for exterior or interior exposure solid surfaces in accordance with the manufacturer's written directions.

5.2.3 Where bond cannot be obtained by one or more of the methods in 5.2.2, a furred or self-furring metal plaster base shall be installed in accordance with Specification C1063.

6. Plaster Proportions and Mixing

6.1 *Proportions*:

6.1.1 All portland cement plasters shall be mixed and proportioned in accordance with the following tables and accompanying requirements, using measuring devices of known volume with successive batches proportioned alike.

6.1.2 Plaster mix used shall be as designated and referenced to Table 1.

6.1.3 Base-coat proportions shall be as shown in Table 2 for the mix specified from Table 1.

6.1.3.1 *Measurement of Materials*—The method of measuring materials for the plaster shall be such that the specified proportions are controlled and accurately maintained. The weights per cubic foot of the materials are considered to be as follows:

Material	Weight, lb/ft^3(kg/m^3)
Portland cement	94 (1505)
Blended cement	Weight printed on bag
Masonry or plastic cement	Weight printed on bag
Hydrated Lime	40 (640)
Lime Putty	80 (1280)
Sand, Damp and Loose (6.1.3.2)	80 (1280) of dry sand

6.1.3.2 For purposes of this specification, a weight of 80 lb (1280 kg) of oven-dried sand shall be used. This is, in most cases, equivalent to one cubic foot of loose, damp sand.

6.1.4 Finish-coat proportions for job-mixed finish coats shall be as specified in Table 3.

6.1.5 *Factory-Prepared Finish Coats*—See 3.2.14.

6.1.6 Dash-bond coat proportions shall be 1 volume part portland cement and not more than 2 volume parts of aggregate mixed to a consistency that will permit application as specified in 7.1.5.

6.1.7 Admixtures shall be proportioned, mixed, and applied in accordance with the printed directions of the manufacturer. (See A2.5.)

6.2 *Mixing*:

6.2.1 All plaster shall be prepared in a mechanical mixer, using sufficient water to produce a workable consistency and uniform color. (See X1.1.)

6.2.2 Base-coat plasters that have stiffened because of evaporation of water shall be permitted to be tempered one

TABLE 1 Plaster Bases—Permissible Mixes

NOTE—See Table 2 for plaster mix symbols.

Property of Base	Mixes for Plaster Coats	
	First (Scratch)	Second (Brown)
Low absorption, such as dense, smooth clay tile, brick, or concrete	C	C, CL, M, or CM
	CM or MS	CM, MS, or M
	P	P
High Absorption, such as concrete masonry, absorptive brick, or tile	CL	CL
	M	M
	CM or MS	CM, MS, or M
	P	P
Metal plaster base	C	C, CL, M, CM, or MS
	CL	CL
	CM or MS	CM, MS, or M
	M	M
	CP	CP or P
	P	P

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TABLE 2 Base-Coat Proportions,[A] Parts by Volume[B]

Plaster Mix Symbols	Cementitious Materials					Volume of Aggregate per Sum of Separate Volumes of Cementitious Materials	
	Portland Cement or Blended Cement	Plastic Cement	Masonry Cement		Lime	1st Coat	2nd[C] Coat
			N	M or S			
C	1	...	...	...	0–¾	2½ –4	3–5
CL	1	...	...	...	¾ –1½	2½ –4	3–5
M	...	...	1	...	...	2½ –4	3–5
CM	1	...	1	...	...	2½ –4	3–5
MS	...	...	...	1	...	2½ –4	3–5
P	...	1	...	...	...	2½ –4	3–5
CP	1	1	...	...	...	2½ –4	3–5

[A] The mix proportions for plaster scratch and brown coats to receive ceramic tile shall be in accordance with the applicable requirements of ANSI A108.1 series applicable to specified method of setting time.
[B] Variations in lime, sand, and perlite contents are allowed due to variation in local sands and insulation and weight requirements. A higher lime content will generally support a higher aggregate content without loss of workability. The workability of the plaster mix will govern the amounts of lime, sand, or perlite.
[C] The same or greater sand proportion shall be used in the second coat than is used in the first coat.

TABLE 3 Job-Mixed Finish Coat Proportion Parts by Volume

Plaster Mix Symbols[A]	Cementitious Materials					Volume of Aggregate per Sum of Separate Volumes of Cementitious Materials[B]
	Portland Cement or Blended Cement	Plastic Cement	Masonry Cement[A]		Lime	
			N	M or S		
F	1	...	...	...	¾ –1½	1½ –3
FL	1	...	...	...	1½ –2	1½ –3
FM	...	...	1	...	...	1½ –3
FCM	1	...	1	...	...	1½ –3
FMS	...	...	...	1	...	1½ –3
FP	...	1	...	...	...	1½ –3

[A] Additional portland cement is not required when Type S or M masonry cement is used.
[B] In areas not subject to impact, perlite aggregate shall be permitted to be used over base-coat plaster containing perlite aggregate.

time only to restore the required consistency. Plaster not used within 1½ h from start of initial mixing shall be discarded.

NOTE 4—Severe hot, dry climate conditions accelerate the stiffening of plaster and require reduction of this limit. The use of cold waters will slow the stiffening process.

6.2.3 Finish-coat plaster shall not be tempered.

7. Application

7.1 *General*:

7.1.1 Portland cement plaster shall be applied by hand or machine to the nominal thickness specified in Table 4.

7.1.2 Plaster nominal thickness shall be measured from the back plane of the metal plaster base, exclusive of ribs or dimples, or from the face of the solid backing with or without metal plaster base, to the outer surface exclusive of texture variations.

7.1.3 Portland cement-based plaster shall be applied on furred metal plaster base when the surface of solid backing consists of gypsum board, gypsum plaster, wood, or rigid foam board-type products.

NOTE 5—On horizontal ceiling supports or roof soffits protected by a drip edge, gypsum board products shall be permitted to be used as backing

TABLE 4 Nominal Plaster Thickness[A] for Three- and Two-Coat Work, in. (mm)

BASE	Vertical				Horizontal			
	1st Coat	2nd Coat	3rd Coat[B]	Total	1st Coat	2nd Coat	3rd Coat[B]	Total
	Interior/Exterior							
Three-coat work:[C]								
Metal plaster base	⅜ (9.5)	⅜ (9.5)	⅛ (3)	⅞ (22)	¼ (6)	¼ (6)	⅛ (3)	⅝ (16)
Solid plaster base:								
Unit masonry	¼ (6)	¼ (6)	⅛ (3)	⅝ (16)		Use two-coat work		
Cast-in-place or precast concrete	¼ (6)	¼ (6)	⅛ (3)	⅝ (16)				⅜ (9.5), max
Metal plaster base over solid base	½ (12.5)	¼ (6)	⅛ (3)	⅞ (22)	½ (12.5)	¼ (6)	⅛ (3)	⅞ (22)
Two-coat work:								
Solid plaster base:								
Unit masonry	⅜ (9.5)	⅛ (3)		½ (12.5)				⅜ (9.5)
Cast-in-place or pre-cast concrete	¼ (6)	⅛ (3)		⅜ (9.5)				⅜ (9.5)

[A] Exclusive of texture.
[B] For solid plaster partitions, additional coats shall be applied to meet the finished thickness specified.
[C] For exposed aggregate finishes, the second (brown) coat shall become the "bedding" coat and shall be of sufficient thickness to receive and hold the aggregate.

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for metal base to receive portland cement plaster.

7.1.4 Separation shall be provided where plaster abuts dissimilar construction materials or openings. (See A2.1.4.)

7.1.5 Each plaster coat shall be applied to an entire wall or ceiling panel without interruption to avoid cold joints and abrupt changes in the uniform appearance of succeeding coats. Wet plaster shall abut set plaster at naturally occurring interruptions in the plane of the plaster, such as corner angles, rustications, openings, and control joints where this is possible. Joinings, where necessary, shall be cut square and straight and not less than 6 in. (152 mm) away from a joining in the preceding coat.

7.1.6 Metal plaster base shall be covered with three-coat work with or without solid backing. The combined total nominal thickness shall be as shown in Table 4. A dash-bond coat shall not replace one of the specified number of coats.

7.1.7 Two-coat work shall be used only over solid bases meeting the requirements of 5.2. The combined total nominal thickness shall be as shown in Table 4. A dash-bond coat shall not replace one of the specified number of coats.

7.1.8 Backplaster where required, shall be applied only after the coat on the opposite side has set sufficiently to resist breaking or cracking the plaster keys.

7.1.9 Each coat shall be permitted to set before the next coat is applied. (See X1.4.2.)

7.1.10 Plaster coats that have become dry shall be evenly dampened with water prior to applying subsequent coats to obtain uniform suction. There shall be no visible water on the surface when plaster is applied.

7.2 *Plaster Application on Metal Plaster Bases*:

7.2.1 The first (scratch) coat shall be applied with sufficient material and pressure to form full keys through, and to embed the metal base, and with sufficient thickness of material over the metal to allow for scoring the surface.

7.2.1.1 As soon as the first (scratch) coat becomes firm, the entire surface shall be scored in one direction only. The vertical surfaces shall be scored horizontally.

7.2.1.2 The first (scratch) coat shall become sufficiently rigid to support the application of the second (brown) coat without damage to the monolithic continuity of the first (scratch) coat or its key.

7.2.2 The second (brown) coat shall be applied with sufficient material and pressure to ensure tight contact with the first (scratch) coat and to bring the combined thickness of the base coat to the nominal thickness shown in Table 4.

7.2.2.1 The surface of the second (brown) coat shall be brought to a true, even plane with a rod or straightedge, filling surface defects in plane with plaster. Dry rodding the surface of the brown coat shall be permitted.

7.2.2.2 The surface shall be floated uniformly to promote densification of the coat and to provide a surface receptive to bonding of the finish coat.

7.2.3 The third (finish) coat shall be applied with sufficient material and pressure to ensure tight contact with, and complete coverage of the base coat and to the nominal thickness shown in Table 4 and 7.3.1.1.

7.3 *Plaster Application on Solid Plaster Bases*:

7.3.1 High-suction bases shall be evenly dampened with clean water prior to the application of plaster. Do not dampen low-suction solid bases, such as dense concrete or smooth brick.

7.3.1.1 Where masonry or concrete surfaces vary in plane, plaster thickness required to produce level surfaces shall not be required to be uniform.

7.3.2 *Three-Coat Application on Solid Bases*:

7.3.2.1 The first (scratch) coat shall be applied with sufficient material and pressure to ensure tight contact and complete coverage of the solid base, to the nominal thickness shown in Table 4. As soon as the first (scratch) coat becomes firm, the entire surface shall be scored in one direction only. The vertical surfaces shall be scored horizontally.

7.3.2.2 The second (brown) coat shall be applied using the same procedures specified in 7.2.2 and 7.2.2.1, bringing the surface to a true, even plane with a rod or straightedge, filling any defects in plane with plaster and darbying. The surface shall be floated uniformly to provide a surface receptive to the application of the third (finish) coat.

7.3.2.3 The third (finish) coat shall be applied as specified in 7.2.3.

7.3.3 *Two-Coat Application on Solid Plaster Bases*:

7.3.3.1 The first (scratch) coat shall be applied as specified in 7.3.2.1.

7.3.3.2 The second (finish) coat shall be applied as specified in 7.2.3.

7.4 *Finish-Coat Application*:

7.4.1 Job-mixed or factory-prepared finish coats shall be applied, by machine or by hand, as specified in 7.2.3.

7.4.2 The use of excessive water during the application and finishing of finish-coat plaster shall be avoided.

7.5 *Fog-Coat Application*—Job-mixed or factory-prepared fog coats shall be applied in accordance with the directions of the manufacturer.

8. Curing and Time Between Coats

8.1 Provide sufficient moisture in the plaster mix or by moist or fog curing to permit continuous hydration of the cementitious materials. The most effective procedure for curing and time between coats will depend on climatic and job conditions. (See X1.4.2.)

8.2 Sufficient time between coats shall be allowed to permit each coat to cure or develop enough rigidity to resist cracking or other physical damage when the next coat is applied. (See X1.4.2.)

9. Product Marking

9.1 Packaged materials shall be clearly marked or labeled to indicate product, brand name, the manufacturer, and the weight of the material contained therein. Similar information shall be provided in the shipping advices accompanying the shipment of bulk materials.

10. Delivery of Materials

10.1 Packaged materials shall be delivered in factory-sealed, unopened, and unbroken packages, containers, or bundles.

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10.2 Bulk materials shall be delivered in clean transport vessels, free of contaminates.

11. Protection of Materials

11.1 Weather-sensitive materials shall be kept in a dry condition until ready for use. (See A2.4.)

11.2 Bulk materials shall be stored to prevent subsequent contamination and segregation.

12. Environmental Conditions

12.1 Portland cement-based plaster shall not be applied to frozen base or to a base containing frost. Plaster mixes shall not contain frozen ingredients. Plaster coats shall be protected from freezing for a period of not less than 24 h after set has occurred.

12.2 Portland cement plaster shall be protected from uneven and excessive evaporation during dry weather and from strong blasts of dry air.

12.3 *Plaster Application*—When artificial heat is required, heaters shall be located to prevent a concentration of heat on uncured plaster. Heaters shall be vented to the outside to prevent toxic fumes and other products of combustion from adhering to or penetrating plaster bases and plaster. Adequate ventilation shall be maintained in all areas, particularly in interior areas with little or no natural air movement.

12.3.1 Interior environment shall be maintained at a temperature above 40 °F not less than 48 h prior to and during application of portland cement-based plaster. Interior temperature shall be maintained above 40 °F until normal occupancy.

12.3.2 For exteriors, plaster shall be applied when the ambient temperature is higher than 40 °F (4.4 °C), unless the work area is enclosed and heat is provided as described in 12.3.

13. Keywords

13.1 brown coat; cementitious; exterior plaster; fog coat—bond; portland cement; scratch coat; stucco

ANNEXES

(Mandatory Information)

A1. GENERAL INFORMATION

A1.1 The work shall include all labor, materials, services, equipment, and scaffolding required to complete the plastering of the project in accordance with the drawings and specifications, except heat, electric power, and potable water.

A1.2 Where a specific degree of fire resistance is required for plastered assemblies and constructions, details of construction shall be in accordance with official reports of fire tests conducted by recognized testing laboratories, in accordance with Test Methods E119.

A1.3 Where a specific degree of sound control is required for plastered assemblies and constructions, details of construction shall be in accordance with official reports of tests conducted by recognized testing laboratories, in accordance with applicable sound tests of Test Methods E90 or E492.

A1.4 Scaffolding shall be constructed and maintained in strict conformity with applicable laws and ordinances.

A1.5 Work schedules shall provide for completion of work affecting supports, framework or lath of a suspended ceiling (such as loading) before plastering work is accomplished.

A1.6 Surfaces and accessories to receive plaster shall be examined before plastering is applied thereto. The proper authorities shall be notified and unsatisfactory conditions shall be corrected prior to the application of plaster. The plastering contractor shall use this portion of the construction specifications for acceptance or rejection of such surfaces.

A1.6.1 Metal plaster bases, backing, attachment, and accessories to receive plaster shall be examined to determine if the applicable requirements of Specification C1063 have been met unless otherwise required by the contract specifications.

A1.6.2 Accessories shall be installed prior to the application of plaster; therefore, their type, depth, and location shall be included in the project contract documents.

A1.6.3 The construction specifier shall describe, in the proper section of the contract specifications, the physical characteristics of solid surface bases to receive plaster, including measures to promote bond. The plane tolerance shall be not more than ¼ in. in 10 ft (3.1 mm/m). The mortar joints shall be flush and not struck. Dissimilar materials such as ties, reinforcing steel, and so forth, shall be cut back ⅛ in. (3 mm) below the surface and treated with a corrosion-resistant coating. Masonry shall be solid at corners and where masonry changes thickness in a continuous construction. Form release compounds shall be compatible with plaster or be completely removed from surfaces to receive plaster.

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A2. DESIGN CONSIDERATIONS

A2.1 Exterior plaster (stucco) is applied to outside surfaces of all types of structures to provide a durable, fire-resistant covering. Interior plaster is applied to inside surfaces that will be subjected to various exposures, such as abrasion, vibration, or to continuous or frequent moisture and wetting, or to freezing or thawing.

A2.1.1 Sufficient slope on faces of plastered surfaces shall be provided to prevent water, snow, or ice from accumulating or standing. Air-entrained portland cement plaster provides improved resistance to freeze/thaw deterioration. Resistance to rain penetration is improved where plaster has been adequately densified during application and properly cured. Plaster shall not, however, be considered to be "waterproof."

A2.1.2 The construction specifier shall describe, in the appropriate section of the contract specifications, the requirements for furnishing and application of flashing. Flashing shall be specified at openings, perimeters, and terminations to prevent water from getting behind plaster. Flashing shall be corrosion-resistant material. Aluminum flashing shall not be used. Flashing supplemented with sealant shall be permitted.

A2.1.3 Sealing or caulking of V-grooves, exposed ends, and edges of plaster panels or exterior work to prevent entry of water shall be provided.

A2.1.4 To reduce spalling where interior plaster abuts openings, such as wood or metal door or window frames, or fascia boards, the edge of three-coat plaster shall be tooled through the second and finish coats to produce a continuous small V-joint of uniform depth and width. On two-coat work, the V-joint shall be tooled through the finish coat only.

A2.1.5 Provide in the appropriate project specification section that solid bases to receive plaster shall not be treated with bond breakers, parting compounds, form oil, or other material that will prevent or inhibit the bond of the plaster to the base.

A2.1.6 Maximum allowable deflection for vertical or horizontal framing for plaster, not including cladding, shall be L/360.

A2.2 *Provisions for Drainage Behind Exterior Plaster:*

A2.2.1 In multistory construction where lath and portland cement plaster exterior walls are continuous past a floor slab, tracks or plates and studs shall be offset to provide a space not less than ⅜ in. (9.5 mm) between the inner face of the exterior plaster and the edge of the floor slab.

A2.2.2 At the bottom of exterior walls where the wall is supported by a floor or foundation, a drip screed and through-wall flashing or weep holes or other effective means to drain away any water that may get behind the plaster shall be provided.

A2.2.3 Where vertical and horizontal exterior plaster surfaces meet, both surfaces shall be terminated with casing beads with the vertical surface extending at least ¼ in. (6 mm) below the intersecting horizontal plastered surface, thus providing a drip edge. The casing bead for the horizontal surface shall be terminated not less than ¼ in. from the back of the vertical surface to provide drainage.

A2.3 *Relief from Stresses:*

A2.3.1 For information on the requirements for control joints and perimeter relief, where a metal plaster base is installed; see the Installation Section of Specification C1063. Solid plaster bases are exempt from these criteria, except as stated in Specification C1063, Section 7.11.4.3.

A2.3.1.1 Control joints shall be cleaned and clear of plaster within the control area after plaster application and before final plaster set.

A2.3.1.2 Prefabricated control joints and expansion joint members shall be installed prior to the application of plaster. Their type, location, depth, and method of installation shall be determined by the characteristics of the substrate and included in the project contract documents.

A2.3.1.3 A groove or cut in plaster only shall not be considered a control or expansion joint.

A2.3.2 Where plaster and metal plaster base continues across the face of a concrete column, or other structural member, water-resistive building paper or felt shall be placed between the metal plaster base and the structural member (paper or plastic-backed metal plaster base shall be permitted). Where the width of the structural member exceeds the approved span capability of the metal plaster base, self-furring metal plaster base shall be used and sparingly scatter nailed to bring paper and metal base to general plane.

A2.3.3 Where dissimilar base materials abut and are to receive a continuous coat of plaster: (*1*) a two-piece expansion joint, casing beads back-to-back, or premanufactured control-expansion joint member shall be installed; or (*2*) the juncture shall be covered with a 6-in. (152-mm) wide strip of galvanized, self-furring metal plaster base extending 3 in. (76 mm) on either side of the juncture; or (*3*) where one of the bases is metal plaster base, self-furring metal plaster base shall be extended 4 in. (102 mm) onto the abutting base.

A2.4 *Weather-Sensitive Materials*—Water-sensitive materials shall be stored off the ground or floor and under cover, avoiding contact with damp floor or wall surfaces. Temperature-sensitive materials shall be protected from freezing. Bulk materials shall be stored in the area of intended use and caution shall be exercised to prevent contamination and segregation of bulk materials prior to use.

A2.5 *Admixtures*—Admixtures shall be proportioned and mixed in accordance with the published directions of the admixture manufacturer.

A2.5.1 The quantity of admixtures required to impart the desired performance is generally very small in relation to the quantities of the other mix ingredients. Batch-to-batch quantities shall be measured accurately.

A2.5.2 Air-entraining agents cause air to be incorporated in the plaster in the form of minute bubbles, usually to improve frost or freeze-thaw resistance, or workability of the plaster during application. Air-entraining agents for portland cement-based plaster shall meet the requirements of Specification C260.

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APPENDIX

(Nonmandatory Information)

X1. GENERAL INFORMATION

X1.1 *Additions*—Bonding compounds or agents may be pre-applied to a surface to receive plaster. In this usage it is not considered an admixture. Bonding compounds that are integrally mixed with plaster prior to its application are considered admixtures. Where exterior exposure and cyclic wetting are anticipated, the re-emulsification capability of the bonding material must be considered. Bonding agents are only as good as the material surface to which they are applied; therefore, form release materials must be removed from concrete or be compatible with the bonding material used. Bonding agents in plaster mixes may increase the cohesive properties of the plaster. Bonding agents should meet the requirements of Specifications C631 or C932.

X1.1.1 By the use of a suitable admixture or additive, it is possible to improve plaster's resistance to moisture movement. However, the use of the terms damproofing or water proofing is misleading, and their use shall be discouraged.

X1.1.2 Natural or synthetic fibers, ½ to 2 in. (13 to 51 mm) in length and free of contaminates may be specified to improve resistance to cracking or to impart improved pumpability characteristics. The quantities per batch shall be in accordance with the published directions of the fiber manufacturer. No more than 2 lb (0.90 kg) of fiber should be used per cubic foot of cementitious material. Asbestos fibers should not be used. Alkaline-resistant glass fibers are recommended where glass fiber is used.

X1.1.3 Plasticizers containing hydrated lime putty, air-entraining agents, or approved fatteners to increase the workability of a portland cement plaster may be used. Plaster consistency and workability are affected by plasticizers that are beneficial in proper quantities from an economic standpoint, but in excess can be detrimental to the long-term performance of the plaster in place.

X1.1.4 Color material for integral mixing with plaster should not significantly alter the setting, strength development, or durability characteristics of the plaster. Natural or mineral pigments that are produced by physical processing of materials mined directly from the earth appear to offer the best long-term performance with respect to resistance to fading. Plaster color is determined by the natural color of the cementitious materials, aggregate, and any color pigment, and their proportions to each other. The use of white cement with the desired mineral oxide pigment color material may result in truer color.

X1.1.4.1 The uniformity of color cannot be guaranteed by the materials manufacturer of the component materials or by the applicating contractor. Color uniformity is affected by the uniformity of proportioning, thoroughness of mixing, cleanliness of equipment, application technique, and curing conditions and procedure, which are generally under the control of the applicator. Color uniformity is affected to an even greater degree by variations in thickness and differences in the suction of the base coat from one area or location to another, the type of finish selected, the migration of color pigments with moisture, and with job site climatic and environmental conditions. These factors are rarely under the control of the applicator.

X1.1.5 Corrective measures for conditions cited in 5.2 include the installation of a furred or self-furring metal plaster base; application of a repair/build-out mortar; grinding/chipping of the concrete base; or combinations thereof. Because these measures may have structural or integrity consequences, they should be considered by all concerned parties with the ultimate selection left to the discretion of the design authority as defined by the Owner-Contractor Agreement.

X1.1.6 The "Project Documents" consist of many individual items but includes both the Project Specifications and the Contract Drawings. It is the intent of this standard to have the type, location, depth, and orientation of control and expansion joints both stated in the Project Specifications as well as shown and detailed on the Contract Drawings where either or both of these documents exist for any particular project.

X1.2 *Finish Coat Categories* (applicable to both natural and colored finishes):

X1.2.1 Texture, as a description of surface appearance, is identified generally with the method and tools used to achieve the finish. Texture can be varied by the size and shape of the aggregate used, the equipment or tools employed, the consistency of the finish coat mix, the condition of the base to which it is applied, and by subsequent decorative or protective treatment.

X1.2.2 There are many factors that affect the ultimate appearance of textured and integrally colored plaster. A suitably sized sample panel should be submitted for approval by the architect and the owner. Once approved, the sample should be maintained on site for reference and comparison.

X1.2.3 With the almost limitless variations possible for finish appearance or texture, the same term may not have the same meaning to the specifier, the contractor, and the actual applicator. The specifier is cautioned to use an approved range of sample panels. To provide some guidance, the following categories are generally understood and recognized to imply a particular method of application technique or resulting finished appearance:

X1.2.4 *Smooth Trowel*—Hand- or machine-applied plaster floated as smooth as possible and then steel-troweled. Steel troweling should be delayed as long as possible and used only to eliminate uneven points and to force aggregate particles into the plaster surface. Excessive troweling should be avoided.

X1.2.5 *Float*—A plaster devoid of coarse aggregate applied in a thin coat completely covering the base coat, followed by a

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second coat that is floated to a true plane surface yielding a relatively smooth to fine-textured finish, depending on the size of aggregate and technique used. It is also known as sand finish.

X1.2.6 *Trowel-Textured (such as Spanish Fan, Trowel Sweep, English Cottage)*—A freshly applied plaster coat is given various textures, designs, or stippled effects by hand troweling. The effects achieved may be individualized and may be difficult to duplicate by different applicators.

X1.2.7 *Rough-Textured (such as Rough Cast, Wet Dash, Scottish Harl)*—Coarse aggregate is mixed intimately with the plaster and is then propelled against the base coat by trowel or by hand tool. The aggregate is largely unexposed and deep textured.

X1.2.8 *Exposed Aggregate (also known at Marblecrete)*—Varying sizes of natural or manufactured stone, gravel, shell, or ceramic aggregates are embedded by hand or machine propulsion into a freshly applied finish "bedding" coat. The size of the aggregate determines the thickness of the "bedding" coat. It is generally thicker than a conventional finish coat.

X1.2.9 *Spray-Textured*—A machine-applied plaster coat directed over a previously applied thin smooth coat of the same mix. The texture achieved depends on the consistency of the sprayed mixture, moisture content of the base to which it is applied, the angle and distance of the nozzle to the surface, and the pressure of the machine.

X1.2.10 *Brush-Finish*—A method of surfacing or resurfacing new or existing plaster. The plaster is applied with a brush to a thickness of not less than $\frac{1}{16}$ in. (1.6 mm). For an existing plaster surface the bond capability must be determined by test application or a bonding compound must be applied prior to the brush application.

X1.2.11 *Miscellaneous Types*—This finish coat category is somewhat similar to trowel-textured finishes, except that the freshly applied plaster is textured with a variety of instruments other than the trowel, such as swept with a broom or brush, corrugated by raking or combing, punched with pointed or blunt instrument, scored by aid of a straightedge into designs of simulated brick, block, stone, and so forth. A variation of texturing a finish coat involves waiting until it has partially set and then flattening by light troweling of the unevenly applied plaster or by simulating architectural terracotta.

X1.2.12 *Scraffitto*—A method of applying two or more successive coats of different colored plaster and then removing parts of the overlaid coats to reveal the underlaying coats, usually following a design or pattern. This is not generally considered a finish coat operation because of the number of thickness of coats.

X1.3 When specified as alternate for final coat, trowel- or plaster machine-applied textured acrylic finishes containing aggregate may be substituted for portland cement finish coats, provided brown coat is properly prepared and finish is applied according to the manufacturer's directions.

X1.3.1 *Staining of Plaster*—Staining and discoloration of plaster, caused by free water draining from one plane of plaster to another or from a dissimilar material onto a plaster surface, can be minimized by providing sufficient depth and angle for drip caps and the use of water-resistive surface coatings.

X1.3.2 Staining of plaster due to entrapment of moisture behind the plaster, can be avoided or minimized by providing an air space for ventilation between the back of the plaster and adjacent material. This type of staining may occur where insulation with or without vapor barrier, or other material containing asphaltic or coal tar derivatives, fireproofing salts, and so forth, can migrate with moisture movement to the finished plaster surface.

X1.3.3 Integrally colored plaster can be discolored or altered in shade if subjected to moisture, either from uncured base coats or external sources, such as rain, too soon after applications.

X1.4 *Installation Instructions:*

X1.4.1 Hand mixing should not be permitted, except as approved by the contract specifier.

X1.4.1.1 After all ingredients are in the mixer, mix the plaster for 3 to 5 min.

X1.4.1.2 The amount of water used in the plaster mix should be determined by the plasterer. Factors such as the suction of the base, or of the previous coat, water content of the aggregate, drying conditions, and finishing operations should be considered in determining water usage. Use of excessive water may result in dropouts, fall or slide off, excessive shrinkage, high porosity, and lower strength.

X1.4.2 *Time Between Coats and Curing for Portland Cement-Based Plaster:*

X1.4.2.1 The timing between coats will vary with climatic conditions and types of plaster base. Temperature and relative humidity extend or reduce the time between consecutive operations. Cold or wet weather lengthens and hot or dry weather shortens the time period. Moderate changes in temperature and relative humidity can be overcome by providing additional heating materials during cold weather and by reducing the absorption of the base by pre-wetting during hot or dry weather.

X1.4.2.2 In order to provide more intimate contact and bond between coats and to reduce rapid water loss, the second coat should be applied as soon as the first coat is sufficiently rigid to resist cracking, the pressures of the second coat application, and the leveling process.

X1.4.2.3 The amount of water and the timing for curing portland cement plaster will vary with the climatic conditions, the type of base, and use or nonuse of water-retentive admixtures.

X1.4.2.4 Some moisture must be retained in or added back to freshly applied portland cement-based plaster. If the relative humidity is relatively high (above 75 %), the frequency for rewetting a surface may be reduced. If it is hot, dry, and windy, the frequency of rewetting must be increased.

X1.4.2.5 Consider the physical characteristics of the structure as well as the previously mentioned conditions when selecting the method of curing. The method can be one or a combination of the following:

(*1*) Moist curing is accomplished by applying a fine fog spray of water as frequently as required, generally twice daily in the morning and evening. Care must be exercised to avoid erosion damage to portland cement-based plaster surfaces.

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Except for severe drying conditions, the wetting of finish coat should be avoided, that is, wet the base coat prior to application of the finish coat.

(*2*) Plastic film, when taped or weighted down around the perimeter of the plastered area, can provide a vapor barrier to retain the moisture between the membrane and plaster. Care must be exercised in placing the film: if too soon, the film may damage surface texture; if too late, the moisture may have already escaped.

(*3*) Canvas, cloth, or sheet material barriers can be erected to deflect sunlight and wind, both of which will reduce the rate of evaporation. If the humidity is very low, this option alone may not provide adequate protection.

SUMMARY OF CHANGES

Committee C11 has identified the location of selected changes to this specification since the last issue, C926 - 11, that may impact the use of this specification. (Approved October 1, 2011)

(*1*) Revised 5.2.3.
(*2*) Added X1.1.5 and X1.1.6.
(*3*) Revised A1.6.3.

Committee C11 has identified the location of selected changes to this specification since the last issue, C926 - 06, that may impact the use of this specification. (Approved May 15, 2011)

(*1*) Added 3.2.23.
(*2*) Revised A1.6 and A1.6.3.
(*3*) Revised A2.3.1.
(*4*) Revised A2.3.1.2.
(*5*) Added A1.6.2.
(*6*) Revised 5.2.
(*7*) Revised 5.2.3.

Committee C11 has identified the location of selected changes to this specification since the last issue, C926 - 98a(2005), that may impact the use of this specification. (Approved June 1, 2006)

(*1*) Removed reference to "plastering section" in A2.3.1.3.

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Date Submitted	8/2/2012	**Section**	Chapte 45	**Proponent**	Joseph Belcher
Chapter	45	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Retains the prescriptive guide for small one story residential structures published by the Masonry Association of Florida.

Rationale

Retain the simplified prescriptive guide for small one story residential structures published by the Masonry Association of Florida.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No cost impact.

Impact to building and property owners relative to cost of compliance with code

No cost impact.

Impact to industry relative to the cost of compliance with code

No cost impact.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

The change retains a simplified prescriptive document for limited one-story masonry residential structures.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

The change retains a simplified prescriptive document for limited one-story masonry residential structures.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

The change retains a simplified prescriptive document for limited one-story masonry residential structures and does not discriminate.

Does not degrade the effectiveness of the code

The change retains a simplified prescriptive document for limited one-story masonry residential structures.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

MAF	- Masonry Association of Florida 398 Camino Gardens Blvd. Suite 108 Boca Raton, FL 33432	
Standard reference number	Title	Referenced in code section number
MAF-97	Guide to Concrete Masonry Residential Construction in High Wind Areas	R301.2.1.1

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_6018_TextOfModification_1.png

The geography of Florida places the state in wind speed zones not addressed by the International Residential Code (IRC). The IRC is intended to be a prescriptive code for residential construction. It contains no prescriptive provisions suitable for the wind speeds assigned to Florida. This modification is one of a series of changes intended to provide the prescriptive provisions to construct wind resistant concrete masonry residential structures and make the code useable for building such structures\.

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S5840

Date Submitted	7/31/2012	**Section**	Chapter 44 AAF	**Proponent**	Joseph Belcher
Chapter	45	**Affects HVHZ**	No	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

None

Summary of Modification

Retains information for adoption of AAF Guide.

Rationale

Retains reference information providing the author, title, and edition of; and, cross referencing the sections of the code referring to, a prescriptive design guide for aluminum structures, which was previously adopted.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact. This has been in FBC since the 2004 Edition.

Impact to building and property owners relative to cost of compliance with code

No impact. This has been in FBC since the 2004 Edition.

Impact to industry relative to the cost of compliance with code

No impact. This has been in FBC since the 2004 Edition.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

The change has a reasonable and substantial connection to the welfare of the general public because it provides the author, title, and edition of; and, cross referencing the sections of the code referring to, a prescriptive design guide for aluminum structures, which was previously adopted.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

The change strengthens and improves the code by providing the author, title, and edition of; and, cross referencing the sections of the code referring to, a prescriptive design guide for aluminum structures, which was previously adopted.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

The change does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities.

Does not degrade the effectiveness of the code

The change improves the effectiveness of the code by providing the author, title, and edition of; and, cross referencing the sections of the code referring to, a prescriptive design guide for aluminum structures, which was previously adopted.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

NO

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

AAF	Aluminum Association of Florida, Inc. 3165 McCrory Place, Suite 185 Orlando, FL 32803	
Standard Reference Number	Title	Referenced in code section number
AAF—10	Guide to Aluminum Construction in High Wind Areas 2010	R301.2.1.1.1, R4403.12.1.2

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5840_TextOfModification_1.png

The base code definition does not address screen enclosures adequately and they are a common structure throughout Florida. The provisions are the result of scientific investigation specifically geared toward developing criteria for the construction of wind resistant screen enclosures. The fact that there are so many screen enclosures constructed in Florida and that the entire state is a hurricane prone region merits Florida specific provisions for the design of such structures.

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S5840 Prior Code Version question. submitted or attempted to be included

The timing was insufficient to get into the ICC Group A Code Change Cycle for the 2015 International Building Code and will be submitted to the next available cycle. The amendment will be submitted to the ICC Group B Code Change Cycle for the 2015 International Residential Code.

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Date Submitted	7/31/2012	**Section**	Chapter 45	**Proponent**	Joseph Belcher
Chapter	45	**Affects HVHZ**	No	**Attachments**	Yes

General Comments No

Alternate Language No

Related Modifications

None

Summary of Modification

Updates AAMA/NPEA/NSA 2100—11

Rationale

Update of an adopted standard.

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

Adopts latest version of adopted standard.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

Adopts latest version of adopted standard.

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

Adopts latest version of adopted standard.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

AAMA	American Architectural Manufacturers Association 1827 Walden Office Square, Suite 550 Schaumburg, IL 60173-4268	
Standard Reference Number	Title	Referenced in code section number
AAMA/NPEA/NSA 2100—11	Voluntary Specifications for Sunrooms	R301.2.1.1.2

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5895_TextOfModification_1.png

A M E R I C A N A R C H I T E C T U R A L

AAMA/NPEA/NSA 2100-11

Specifications for Sunrooms



M A N U F A C T U R E R S A S S O C I A T I O N

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S5891

Date Submitted	7/31/2012	**Section**	FMA	**Proponent**	Janet Gerard
Chapter	45	**Affects HVHZ**	No	**Attachments**	No
General Comments	No				
Alternate Language	No				

Related Modifications

R703.8

Summary of Modification

Adds standard practiced for installation flashing and sealing of windows and doors installed in wood frame and masonry construction where extreme wind/water conditions exist

Rationale

Provides for alternative installation flashing and sealing methods when the manufacturers instructions may not meet the wall or exposure conditions.

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

The FMA/AAMA 100, FMA/AAMA 200, FMA/WDMA 250 Standard Practices exist in current Florida Residential codes Addition of FMA/AAMA/WDMA 300-12 and update to FMA/AAMA 100-12 provides additional information for doors installed in wood frame construction

Impact to building and property owners relative to cost of compliance with code

The FMA/AAMA 100, FMA/AAMA 200, FMA/WDMA 250 Standard Practices exist in current Florida Residential codes Addition of FMA/AAMA/WDMA 300-12 and update to FMA/AAMA 100-12 provides additional information for doors installed in wood frame construction

Impact to industry relative to the cost of compliance with code

The FMA/AAMA 100, FMA/AAMA 200, FMA/WDMA 250 Standard Practices exist in current Florida Residential codes Addition of FMA/AAMA/WDMA 300-12 and update to FMA/AAMA 100-12 provides additional information for doors installed in wood frame construction

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

The FMA/AAMA 100, FMA/AAMA 200, FMA/WDMA 250 Standard Practices exist in current Florida Residential codes Addition of FMA/AAMA/WDMA 300-12 and update to FMA/AAMA 100-12 provides additional information for doors installed in wood frame construction

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

The FMA/AAMA 100, FMA/AAMA 200, FMA/WDMA 250 Standard Practices exist in current Florida Residential codes Addition of FMA/AAMA/WDMA 300-12 and update to FMA/AAMA 100-12 provides additional information for doors installed in wood frame construction

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

The FMA/AAMA 100, FMA/AAMA 200, FMA/WDMA 250 Standard Practices exist in current Florida Residential codes Addition of FMA/AAMA/WDMA 300-12 and update to FMA/AAMA 100-12 provides additional information for doors installed in wood frame construction

Does not degrade the effectiveness of the code

The FMA/AAMA 100, FMA/AAMA 200, FMA/WDMA 250 Standard Practices exist in current Florida Residential codes Addition of FMA/AAMA/WDMA 300-12 and update to FMA/AAMA 100-12 provides additional information for doors installed in wood frame construction

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

Standard Reference number	Title	Referenced in Code section number
FMA/AAMA100--12	Standard Practice for the Installation of Windows with Flanges or Mounting Fins in Wood Frame Construction	R703.8
FMA/AAMA 200-09	Standard Practice for the Installation of Windows with Frontal Flanges for Surface Barrier Masonry Construction for Extreme Wind/Water Conditions	R703.8
FMA/WDMA 250-10	Standard Practice for the Installation of Non-Frontal Flange Windows with Mounting Flanges for Surface Barrier Masonry Construction for Extreme Wind/Water Conditions	R703.8
FMA/AAMA/WDMA 300-12	Standard Practice for the Installation of Exterior Doors in Wood Frame Construction for Extreme Wind/Water Exposure	R703.8

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Date Submitted	7/25/2012	**Section**	Standards	**Proponent**	Dwight Wilkes
Chapter	45	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	No				

Related Modifications

5651

Summary of Modification

To recognize the standard for aluminum design as an alternative provision and provide the current edition AAMA 2100-10 . American Architectural Manufacturers Association (AAMA) National Patio Enclosure Association (NPEA) & National Sunroom Association (NSA) 2100 – Specification for Sunrooms.

Rationale

Updating an existing standard recognized in the 2010 FRC as an alternative provision.
AAMA/NPEA/NSA 2100-11

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to building and property owners relative to cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Helps protect the health and welfare of the public for these products to remain in the base code.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This will improve the code by reinstating this standard that exist in the Florida Code with the current edition.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification does not discriminate as it allows the use of any product that shows proof of meeting the code established standards.

Does not degrade the effectiveness of the code

Does not degrade the code as this standard is in the 2010 FRC.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

NO

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

YES

AAMA American Architectural Manufacturers Association
1827 Walden Office Square, Suite 550
Schaumburg, IL 60173

Standard reference number	Title	Referenced in code section number
AAMA/WDMA/CSA 101/I.S.2/A440—11	North American Fenestration Standards/Specifications for Windows, Doors and Skylights	R308.6.9, R612.3, N1102.4.3
450—09	Voluntary Performance Rating Method for Mulled Fenestration Assemblies	R612.8
506—08	Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products	R612.6.1
711—07	Voluntary Specification for Self-adhering Flashing Used for Installation of Exterior Wall Fenestration Products	R703.8
AAMA/NPEA/NSA 2100 -02 or -11	Voluntary Specifications for Sunrooms	R301.1.1

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AAMA American Architectural Manufacturers Association
1827 Walden Office Square, Suite 550
Schaumburg, IL 60173

Standard reference number	Title	Referenced in code section number
AAMA/WDMA/CSA 101/I.S.2/A440—11	North American Fenestration Standards/Specifications for Windows, Doors and Skylights	R308.6.9, R612.3, N1102.4.3
450—09	Voluntary Performance Rating Method for Mulled Fenestration Assemblies	R612.8
506—08	Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products	R612.6.1
711—07	Voluntary Specification for Self-adhering Flashing Used for Installation of Exterior Wall Fenestration Products	R703.8

AAMA/NPEA/NSA 2100 -02 or -11	Voluntary Specifications for Sunrooms	R301.1.1

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S5659 Text Modification

Page: 1

R301.1.1
Alternative provisions.
As an alternative to the requirements in Section R301.1 the following standards are permitted subject to the limitations of this code and the limitations therein. Where engineered design is used inconjunction with these standards, the design shall comply with the ~~International~~ Florida Building Code – Building.
1. AF&PA - *Wood Frame Construction Manual* (WFCM).
2. AISI Standard for Cold-Formed Steel Framing—Prescriptive Method for One- and Two-Family Dwellings (AISI S230).
3. ICC Standard on the Design and Construction of Log Structures (ICC 400).
4. American Architectural Manufacturers Association (AAMA) National Patio Enclosure Association (NPEA) & National Sunroom Association (NSA) 2100 – *Specification for Sunrooms.*

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AMERICAN ARCHITECTURAL

AAMA/NPEA/NSA 2100-11

Specifications for Sunrooms









MANUFACTURERS ASSOCIATION

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Date Submitted	7/25/2012	**Section**	Standards	**Proponent**	Dwight Wilkes
Chapter	45	**Affects HVHZ**	Yes	**Attachments**	Yes
General Comments	No				
Alternate Language	Yes				

Related Modifications

5663

Summary of Modification

To recognize the standard editions for AAMA 506-06 or 08 or 11 Voluntary Specifications for Impact and Cycle Testing of Fenestration Products.

Rationale

Adding an updated standard and existing standards recognized in the 2010 Florida Residential Code

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to building and property owners relative to cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Impact to industry relative to the cost of compliance with code

No impact as these provisions are currently being enforced by the 2010 FBC.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Helps protect the health and welfare of the public by having products tested to this standard.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This will improve the code by reinstating these standards that exist in the Florida Code with the current edition.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

This modification does not discriminate as it allows the use of any product that shows proof of meeting the code established standards.

Does not degrade the effectiveness of the code

Does not degrade the code as these standards are in the 2010 Florida Residential Code and update by including the current edition.

Is the proposed code modification part of a prior code version?

YES

The provisions contained in the proposed amendment are addressed in the applicable international code?

OTHER

Explanation of Choice

Only the 08 edition of AAMA 506 is referenced in the 2012 IRC, this modification will add the 06 and 11 for products intended for use in Florida.

The amendment demonstrates by evidence or data that the geographical jurisdiction of Florida exihibits a need to strengthen the foundation code beyond the needs or regional variation addressed by the foundation code and why the proposed amendment applies to the state?

YES

The proposed amendment was submitted or attempted to be included in the foundation codes to avoid resubmission to the Florida Building Code amendment process?

NO

S5664-A1

Proponent Anthony Miller **Submitted** 9/23/2012 **Attachments** Yes Miller

Text of Modification

AAMA
American Architectural Manufacturers Association
1827 Walden Office Square, Suite 550
Schaumburg, IL 60173
Standard
reference
number
Title
Referenced
in code
section number
AAMA/WDMA/CSA
101/I.S.2/A440—11
North American Fenestration Standards/Specifications for Windows,
Doors and Skylights
R308.6.9, R612.3, N1102.4.3
450—09
Voluntary Performance Rating Method for Mulled Fenestration Assemblies
R612.8
506—06 or 08 or 11
Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products
R301.2.1.2
R612.6.1
711—07
Voluntary Specification for Self-adhering Flashing Used for Installation of
Exterior Wall Fenestration Products
R703.8

Rationale

The 2012 IRC only references a single edition of ASTM E1886 and E1996. The Florida Product Approval system only allows products to be tested to specific editions referenced in the building code. Many products have a 4-8 year certification life so having previous editions of these standards will allow manufacturers to utilize the full life of a certification without having to retest their products. If only one edition is referenced, this will require manufacturers to retest all products every

Fiscal Impact Statement

Impact to local entity relative to enforcement of code

No impact as these provisions are currently being enforced in the 2010 FRC.

Impact to building and property owners relative to cost of compliance with code

No impact as these provisions are currently being enforced in the 2010 FRC.

Impact to industry relative to the cost of compliance with code

This amendment will actually reduce the cost of compliance because it allows manufacturers to utlilize full certification life of each product without excessive retesting.

Requirements

Has a reasonable and substantial connection with the health, safety, and welfare of the general public

Health, safety and welfare of the public are maintained as these provisions are currently enforced in the 2010 FRC.

Strengthens or improves the code, and provides equivalent or better products, methods, or systems of construction

This will improve the code as these standards are currently being enforced in the 2010 FRC.

Does not discriminate against materials, products, methods, or systems of construction of demonstrated capabilities

Does not discriminate because it allows the use of any product that shows proof of compliance with the standards established by the code.

Does not degrade the effectiveness of the code

Does not degrade the effectiveness of the code as it simply reinstates the requirements that are already in effect in the 2010 FRC.

AAMA	American Architectural Manufacturers Association 1827 Walden Office Square, Suite 550 Schaumburg, IL 60173	
Standard reference number	Title	Referenced in code section number
AAMA/WDMA/CSA 101/I.S.2/A440—11	North American Fenestration Standards/Specifications for Windows, Doors and Skylights	R308.6.9, R612.3, N1102.4.3
450—09	Voluntary Performance Rating Method for Mulled Fenestration Assemblies	R612.8
506—06 or 08 or 11	Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products	R301.2.1.2 R612.6.1
711—07	Voluntary Specification for Self-adhering Flashing Used for Installation of Exterior Wall Fenestration Products	R703.8

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S5664 -A1 Text Modification

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AAMA	American Architectural Manufacturers Association 1827 Walden Office Square, Suite 550 Schaumburg, IL 60173	
Standard reference number	Title	Referenced in code section number
AAMA/WDMA/CSA 101/I.S.2/A440—11	North American Fenestration Standards/Specifications for Windows, Doors and Skylights	R308.6.9, R612.3, N1102.4.3
450—09	Voluntary Performance Rating Method for Mulled Fenestration Assemblies	R612.8
506—06 or 08 or 11	Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products	R301.2.1.2 R612.6.1
711—07	Voluntary Specification for Self-adhering Flashing Used for Installation of Exterior Wall Fenestration Products	R703.8

ASTM	ASTM International 100 Barr Harbor DriveWest Conshohocken, PA 19428-2959	
Standard Reference Number	Title	Referenced in Code Section Number
E 1300-04e01, 07e01, or 09a	Practice for Determining Load Resistance of Glass in Buildings	R612.6, R4410.2.2
E 1886—02 or 05	Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missiles and Exposed to Cyclic Pressure Differentials	R301.2.1.2, R612.6.1
E 1996—02, 05, 06, 09, or 12	Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes	R301.2.1.2, R612.6.1

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S5664 -A2 Text Modification

Page: 1

AAMA	American Architectural Manufacturers Association 1827 Walden Office Square, Suite 550 Schaumburg, IL 60173	
Standard reference number	Title	Referenced in code section number
AAMA/WDMA/CSA 101/I.S.2/A440—11	North American Fenestration Standards/Specifications for Windows, Doors and Skylights	R308.6.9, R612.3, N1102.4.3
450—09	Voluntary Performance Rating Method for Mulled Fenestration Assemblies	R612.8
506—06 or 08 or 11	Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products	R301.2.1.2 R612.6.1
711—07	Voluntary Specification for Self-adhering Flashing Used for Installation of Exterior Wall Fenestration Products	R703.8

ASTM	ASTM International 100 Barr Harbor DriveWest Conshohocken, PA 19428-2959	
Standard Reference Number	Title	Referenced in Code Section Number
E 1300-04e01, 07e01, or 09a	Practice for Determining Load Resistance of Glass in Buildings	R612.6, R4410.2.2
E 1886—02 or 05	Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missiles and Exposed to Cyclic Pressure Differentials	R301.2.1.2, R612.6.1
E 1996—02, 05, 06, 08, or 12	Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes	R301.2.1.2, R612.6.1

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Standard reference number	Title	Referenced in code section number
AAMA/WDMA/CSA 101/I.S.2/A440—11	North American Fenestration Standards/Specifications for Windows, Doors and Skylights	R308.6.9, R612.3, N1102.4.3
450—09	Voluntary Performance Rating Method for Mulled Fenestration Assemblies	R612.8
506—06 or 08 or 11	Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products	R301.2.1.2 R612.6.1
711—07	Voluntary Specification for Self-adhering Flashing Used for Installation of Exterior Wall Fenestration Products	R703.8

http://www.floridabuilding.org/Upload/Modifications/Rendered/Mod_5664_Text_Chapter 44 2012 IRC BASE Code AAMA 506 mod for inclusion into

MODIFICATION TEXT:

R 301.2.1.2 Protection of openings.

Exterior glazing in buildings located in windborne debris regions shall be protected from windborne debris. Glazed opening protection for windborne debris shall meet the requirements of the Large Missile Test of ASTM E 1996 and ASTM E 1886 or TAS 201,202, and 203 or AAMA 506 referenced therein. The applicable wind zones for establishing missile types in ASTM E 1996 are shown on Figure R XXX. Garage door glazed opening protection for windborne debris shall meet the requirements of an approved impact-resisting standard or ANSI/DASMA 115."

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A M E R I C A N A R C H I T E C T U R A L

AAMA 506-06

Voluntary Specifications for Hurricane Impact and Cycle Testing of Fenestration Products



M A N U F A C T U R E R S A S S O C I A T I O N

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AAMA 506-06
ORIGINALLY PUBLISHED: 2000
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REVISED: 3/06
PUBLISHED: 3/06

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1.0 SCOPE

1.1 This specification uses existing ASTM test methods to qualify windows, doors, skylights, storefronts and curtain walls as "hurricane resistant".

1.2 This specification is intended to include fenestration products of all framing materials covered by the gateway documents listed in paragraph 1.3.

1.3 Products seeking qualification through this specification must first satisfy the gateway requirements of one of the following:

1.3.1 Windows and Glass Doors:

1.3.1.1 AAMA/NWWDA 101/I.S.2-97

1.3.1.2 AAMA/WDMA 101/I.S.2/NAFS-02

1.3.1.3 AAMA/WDMA/CSA 101/I.S.2/A440-05

1.3.2 Curtain walls and Storefront: AAMA 501-05

2.0 REFERENCED DOCUMENTS

2.1 AAMA/NWWDA 101/I.S.2-97, Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors

2.2 AAMA/WDMA 101/I.S.2/NAFS-02, Voluntary Performance Specification for Windows, Skylights and Glass Doors – A North American Fenestration Standard

2.3 AAMA/WDMA/CSA 101/I.S.2/A440-05, Standard/ Specification for Windows, Doors, and Unit Skylights

2.4 AAMA 501-05, Methods of Test for Exterior Walls

2.5 ASTM E 1886-02 or -05, Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials

2.6 ASTM E 1996-02 or -05, Standard Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes

3.0 SIGNIFICANCE AND USE

3.1 This specification provides a system for rating the ability of windows, doors, skylights, storefront and curtain walls and sliding glass doors to withstand impact and pressure cycling generally associated with hurricane conditions.

3.2 The basis for this specification is initial qualification through one of the gateway documents referenced in paragraph 1.3 followed by impact and cycle testing in accordance with ASTM E 1886 and ASTM E 1996.

4.0 APPARATUS

4.1 Apparatus shall meet the requirements outlined in ASTM E 1886.

5.0 CALIBRATION

5.1 Calibration of all test equipment shall be performed in accordance with ASTM E 1886.

5.2 Calibration records shall be maintained for a period of no less than four years.

6.0 TEST SPECIMENS

In addition to the guidelines given in ASTM E 1886 and ASTM E 1996, the following requirements shall be met:

6.1 Test specimens shall be the largest size for which approval is desired.

6.2 To be approved to this specification, mullions shall be tested as part of the test samples. Testing of one mullion profile or configuration does not qualify any other mullion profile or configuration. Exception: The addition of cladding or of a wrapped material to the mullion will not constitute a change in profile or configuration providing material is not removed from the mullion.

Mullions shall only be qualified to the largest window or door (width and height) on which testing is performed.

6.3 To be approved to this specification, true muntins shall be tested as part of the test samples. Testing of one muntin profile or configuration does not qualify any other muntin profile or configuration. Any variation in muntin joinery, wall thickness or glazing application can only be approved by testing the variation(s) through the entire procedure outlined in ASTM E 1886.

7.0 TEST SPECIMEN PREPARATION

7.1 Test specimen shall be mounted using anchors and anchor spacing for which approval is desired. To qualify more than one anchor type, at least one of the test samples must be tested with that anchor and its appropriate framing material (i.e. wood, masonry, etc.).

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7.2 Test specimen shall not incorporate anchors, supports or stiffeners that are not intended to be included during normal installation.

8.0 TEST REPORT

8.1 In addition to the items required by ASTM E 1886 and ASTM E 1996, the following items shall be detailed in the test report.

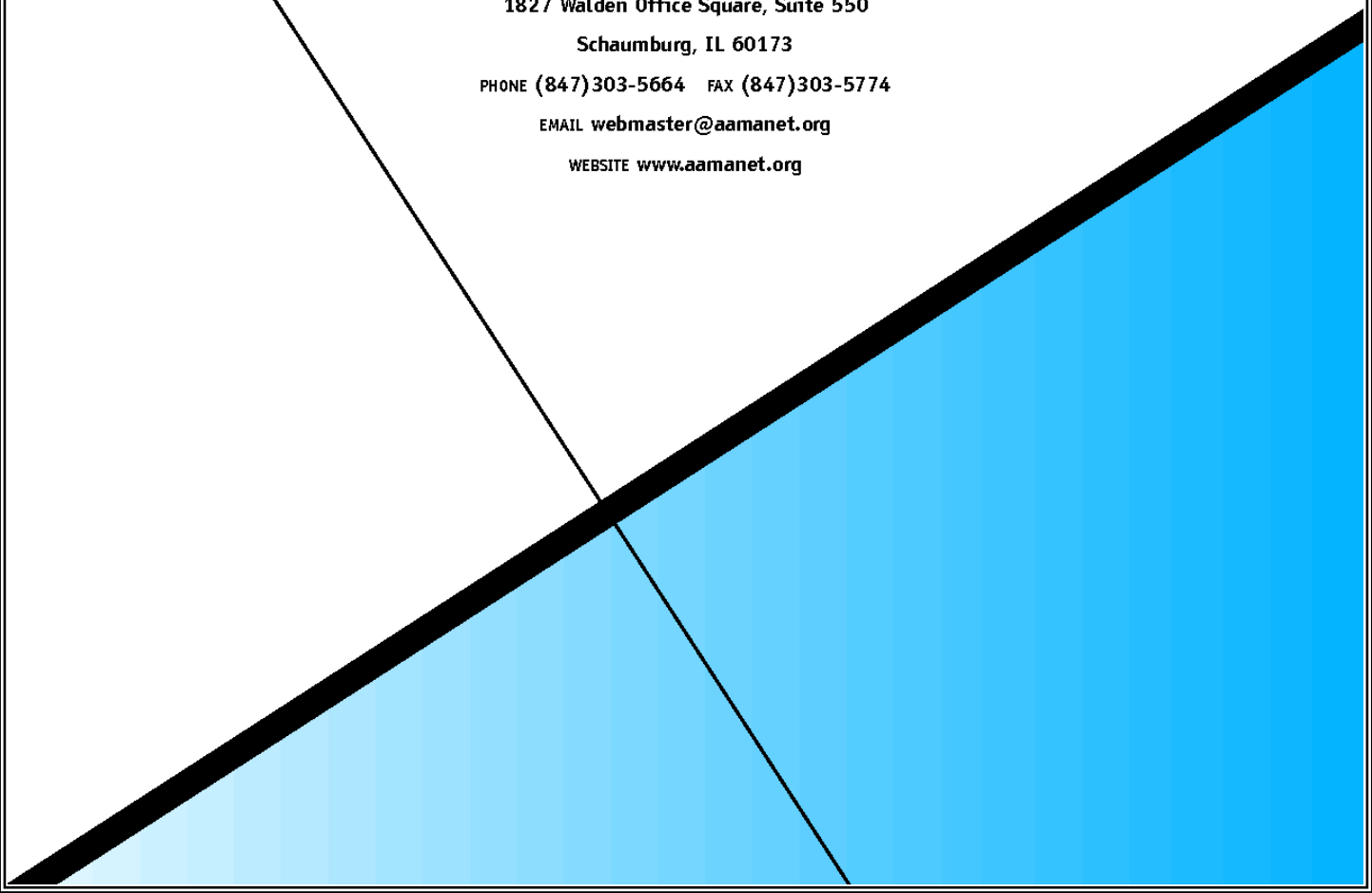
8.1.1 A reference to the test report showing compliance with the gateway requirements of paragraph 1.3.

8.1.2 A description of the anchor type and spacing used during the test with any necessary drawings to adequately describe anchor details and accurate anchor locations.

8.1.3 When used, accurate identification of mullions and muntins including extrusion drawings, shall accompany the test report.

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AMERICAN ARCHITECTURAL

AAMA 506-08

Voluntary Specifications for Impact and Cycle Testing of Fenestration Products

MANUFACTURERS ASSOCIATION

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1.0 SCOPE

1.1 This specification uses existing ASTM test methods to qualify windows, doors and skylights as "impact resistant."

1.2 This specification is intended to include fenestration products of all framing materials covered by the standards and specifications listed in Section 1.3.

1.3 Products seeking qualification through this specification shall first satisfy the minimum requirements of one of the following:

1.3.1 AAMA/NWWDA 101/I.S. 2-97

1.3.2 AAMA/WDMA 101/I.S. 2/NAFS-02

1.3.3 AAMA/WDMA/CSA 101/I.S. 2/A440-05

1.3.4 AAMA/WDMA/CSA 101/I.S. 2/A440-08

2.0 REFERENCED DOCUMENTS

2.1 References to the documents listed below shall be to the edition indicated. Any updated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

2.2 American Architectural Manufacturers Association (AAMA)

AAMA/NWWDA 101/I.S.2-97, Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors

AAMA/WDMA 101/I.S.2/NAFS-02, Voluntary Performance Specification for Windows, Skylights and Glass Doors – A North American Fenestration Standard

AAMA/WDMA/CSA 101/I.S.2/A440-05, Standard/ Specification for Windows, Doors, and Unit Skylights

AAMA/WDMA/CSA 101/I.S.2/A440-08, North American Fenestration Standard/Specification for Windows, Doors, and Skylights

AAMA 450-06, Voluntary Performance Rating Method for Mulled Fenestration Assemblies

2.3 ASTM International (ASTM)

ASTM E 1886-02 or -05, Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials

ASTM E 1996-02 or -05, Standard Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors and Storm Shutters Impacted by Windborne Debris in Hurricanes

3.0 SIGNIFICANCE AND USE

3.1 This specification provides a system for rating the ability of windows, doors, skylights and sliding glass doors to withstand impact and pressure cycling generally associated with hurricane conditions.

3.2 The basis for this specification is initial qualification through one of the standards and specifications referenced in Section 1.3, followed by impact and cycle testing in accordance with ASTM E 1886 and ASTM E 1996.

4.0 APPARATUS

Apparatus shall meet the requirements outlined in ASTM E 1886.

5.0 CALIBRATION

5.1 Calibration of all test equipment shall be performed in accordance with ASTM E 1886.

5.2 Calibration records shall be maintained for a period of no less than four years.

6.0 TEST SPECIMENS

In addition to the guidelines given in ASTM E 1886 and ASTM E 1996, the following requirements shall be met:

6.1 Test specimens shall be the largest size for which approval is desired.

6.2 To be approved to this specification, mullions shall be tested as part of the test samples. Testing of one mullion profile or configuration does not qualify any other mullion profile or configuration (except as allowed for in Section 8.5).

EXCEPTION: *The addition of cladding or a wrapped material to the mullion will not constitute a change in profile or configuration, providing material is not removed from the mullion.*

Mullions shall only be qualified to the largest window or door (width and height) on which testing is performed.

6.3 To be approved to this specification, true muntins shall be tested as part of the test samples. Testing of one muntin profile or configuration does not qualify any other muntin profile or configuration. Any variation in muntin joinery, wall thickness or glazing application can only be approved by testing the variation(s) through the entire procedure outlined in ASTM E 1886.

7.0 TEST SPECIMEN PREPARATION

7.1 Test specimen shall be mounted using anchors and anchor spacing for which approval is desired. To qualify more than one anchor type, at least one of the test samples must be tested with that anchor and its surrounding building substrate for which qualification by this standard is sought.

7.2 Test specimen shall not incorporate anchors, supports or stiffeners that are not intended to be included during normal installation.

8.0 QUALIFICATION OF ALTERNATE CONSTRUCTIONS

8.1 The qualification of the following alternate constructions or details shall be accomplished by successful completion of all requirements of Section 6.0 (no additional testing is required).

a) Simulated divided lites
b) Thicker glass of same type
c) Reflective coatings, low-emissivity coatings, frits, and tints of same glass type
d) Increase in thickness of interlayer
e) Change of color or opacity of interlayer
f) Non-structural cosmetic changes (i.e. escutcheons)
g) Change of glazing back bedding color from the same manufacturer, provided the new color is made from the same or equivalent back bedding compound

8.2 The following alternate constructions or details shall be qualified by successful completion of all requirements of Section 6.0 on one additional specimen. Multiple construction changes made to discrete specimens shall be tested in combination to ensure the compatibility of the intended combination.

a) Alternate anchorage details (size, spacing, type or substrate)
b) Change of glazing back bedding manufacturer (same or equivalent back bedding compound)
c) Change in glass type
d) Change in interlayer manufacturer
e) Change insulating glass to monolithic
f) Spacer change
g) Change in hinging hardware
h) Change in locking hardware
i) Insulating glass sealant changes provided requirements of AAMA/NWWDA 101/I.S .2-97, AAMA/WDMA 101/I.S. 2/NAFS-02, AAMA/WDMA/CSA 101/I.S. 2/A440-05 or AAMA/WDMA/CSA 101/I.S. 2/A440-08 are maintained

EXAMPLE: *An additional specimen qualifies a change in back bedding, a second additional specimen qualifies a different interlayer manufacturer; because the alternate back bedding was not tested with the alternate interlayer, the combination of the two alternates shall not be qualified by this testing scenario.*

8.3 The anchorage details (size, spacing or substrate) shall be permitted to qualify by submittal of calculations according to accepted engineering practice.

8.4 Alternate constructions not listed in Sections 8.1 or 8.2 shall be qualified with three test specimens successfully completing the requirements of this standard. Alternate constructions qualified by Section 8.2 shall not be allowed the opportunity of one replacement specimen that ASTM E 1996 permits for the three base specimens.

8.5 QUALIFICATION OF MULLED ASSEMBLIES IN CONJUNCTION WITH AAMA 450

8.5.1 Mulled assemblies shall be qualified by this document if all of the following conditions are met:

a) The largest assembly with the longest mullion shall be impacted at its midpoint
b) The assembly shall be certified to AAMA 450
c) Individual units making up the assembly shall all comply with this document

8.5.2 Impact resistant assemblies meeting the requirements of Section 8.5.1 shall be permitted to follow the same rules of unit substitution that are permitted by AAMA 450.

8.5.3 Qualification of an assembly with the longest mullion shall qualify that mullion for other assemblies containing that same mullion at a shorter length. Section 8.5.2 shall apply to these other assemblies.

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9.0 TEST REPORT

9.1 In addition to the items required by ASTM E 1886 and ASTM E 1996, the following items shall be detailed in the test report:

9.1.1 A reference to the test report showing compliance with the gateway requirements of Section 1.3.

9.1.2 A description of the anchor type and spacing used during the test with any necessary drawings to adequately describe anchor details and accurate anchor locations.

9.1.3 When used, accurate identification of mullions and muntins including extrusion drawings shall accompany the test report.

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Changes from AAMA 506-06 to AAMA 506-08

- Various editorial changes were made
- Removed the reference to storefronts and curtain walls
- Allowed an exception in Section 6.2
- Added, “surrounding building substrate for which qualification by this standard is sought” in Section 7.1
- Added new Section 8.0, “Qualification of Alternate Constructions”

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AMERICAN ARCHITECTURAL

AAMA 506-11

Voluntary Specifications for Impact and Cycle Testing of Fenestration Products





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