International Code Council

CONSENSUS COMMITTEE ON HURRICANE RESISTANT CONSTRUCTION (IS-HRC)

Meeting #5 – July 12-13, 2005
Disney's Yacht Club Resort – Orlando FL.

MINUTES

I. CALL TO ORDER

The Chairman called the meeting to order at 10:00 AM. The Chairman welcomed everyone and self-introductions were made. An attendance list was provided for the committee and guests to sign.

II. APPROVAL OF AGENDA

The deadline for proposals as listed under item **VII**. B.1. should read "March 24, 2006 and August, 2007" in lieu of "March 24, 2007 and August, 2008". The meeting agenda was approved unanimously with the changes as noted.

III. ATTENDANCE

July 12
The review of the signed attendance list showed that a quorum was present. Fifteen committee members, seventeen guest and one ICC staff member was present.

Members present:	**Guests present:**	**ICC Staff present:**
Shelia Blake	Ronald Barnett	Larry Franks-Secretary
Kelly Cobeen	James Bell	
Ralph Dorio	Mike Bowie	
Charles Everly	Dennis Braddy	
Fayez Fanik	Heath Cobb	
Dennis Graber	Jim Collins	
Dale Greiner	Mark Daniels	
Eric Haefli	Michael Fischer	
Marcelino Iglesias	Jeff Hyde	
Medard Kopczynski	Tom Janicak	
Mo Madani	Bob Kelly	
Stephen Skalko	Bob Koning	
Jeffrey Stone	David Lewis	
George Wiggins	Robert Lutz	
Robert Wills	Bob Mitchell	
	Frank O'Neill	
	Jason Smart	

July 13

The review of the signed attendance list showed that a quorum was present. Fourteen committee members, nine guest and one ICC staff member was present.

Members present:	**Guests present:**	**ICC Staff present:**
Sheila Blake	Katherine Berkenbile	Larry Franks-Secretary
Kelly Cobeen	Mike Bowie	
Ralph Dorio	Jim Collins	
Charles Everly	Tom Janicak	
Fayez Fanik	Robert Kelly	
Dennis Graber	Robert Lutz	
Dale Greiner	Bob Mitchell	
Eric Haefli	Frank O'Neill	
Marcelino Iglesias	Jason Smart	
Medard Kopczynski		
Mo Madani		
Stephen Skalko		
Jeffrey Stone		
Robert Wills		

IV. MEMBERSHIP

The Secretary announced that the ICC Standards Council has appointed one Principal and two Alternates to the committee as follows:

Principal:
Mo Madani (G) – Florida Department of Community Affairs

Alternate to Eric Haefli with State Farm Insurance:
Jeffrey K. Feid (U)
State Farm Insurance

Alternate to Mr. Dennis W. Graber with National Concrete Masonry Association:
Charles B. Clark, Jr. (P)
Brick Industry Association

The Secretary announced that the committee is unbalanced at 25 members.
We now have 9 General, 7 User, and 9 Producer voting members.

V. APPROVAL OF MEETING #4 MINUTES – MAY 2-3, 2005

The minutes of the meeting #4 – May 2-3, 2005 was approved unanimously as submitted.

VI. TRANSITION TO AD HOC COMMITTEE ON RESIDENTIAL CONSTRUCTION IN HIGH WIND REGIONS

A. ICC Council Policy CP 7-04 Committees and Members

The Chairman announced that the ICC Standards Council will recommend to the ICC Board of Directors to abandon development of the ANSI Standard and convert this committee to an Ad Hoc committee to update the IRC for construction in high wind regions.

The ICC Board of Directors will have to withdraw the ANSI PINS and establish the Ad Hoc committee. It is expected that the Board will do this at their annual meeting at Detroit, MI in September. In light of this, the committee is to begin now to function as the Ad Hoc committee.

A copy of ICC Council Policy CP 7-04 was distributed to the committee. This will be the policy governing this committee. Staff will prepare a scope and objective statement. The scope will include the technical requirements from the ANSI PINS.

The ICC Standards Council will no longer be responsible for the committee membership. The ICC Building Code Council will be responsible for all future appointments
The committee membership will remain as is and will not be bound by ANSI rules, but ICC will strive to maintain the balance of interest we now have. There are no plans, at this time, to expand the membership; however everyone is encouraged to continue to apply as a member or an alternate.

The Ad Hoc committee is not bound by the ANSI 2/3 majority vote for committee action. A motion was made to require a simple majority to approve the code changes developed by this Ad Hoc committee. The motion passed by a vote of 9 to 4 with 2 abstains.

B. ICC Code Development Procedures

A copy of the ICC Code Development Procedure was distributed to the committee. The proposals developed by the committee must comply with this procedure. The code change proposals must be submitted under the committee's name plus an individual with prime responsibility. This will normally be the chairman or a duly appointed individual.

C. Task Groups

The committee discussed the need for the existing task groups and redirection of the task groups. It was decided that the task groups would develop the code changes and the main committee will review and approve them prior to submittal.

The Loads Task Group will not be needed to develop code changes, but will assist other task groups with load related issues in developing substantiations for their code changes.

The Preface and General Requirements Task Group will continue with the definitions and any general requirements for the high wind code changes.

All other Task groups will remain and develop code changes consistent with the previous scope.

VII. DEVELOP CODE CHANGE PROPOSAL(S) TO THE 2006 IRC

A. Propose new IRC Chapter 43 – Construction in High Wind Regions

The committee reviewed Chapters 1 through 11 of the 2003 IRC and identified sections for potential code changes to address high wind.
(See Attachment A)

A review of Chapter 7 revealed a need for a new task group. The chairman appointed a Component and Cladding (Exterior wall covering) Task Group with the following members:

Component and Cladding (Exterior Wall covering) Task Group	
Charles Everly – Chairman	Mo Madani
Robert Wills	Jason Smart
Fayez Fanik	Bob Kelly
Eric Haefli	Dennis Braddy

Staff will make available a draft of the 2006 IRC, Chapters 1 through 11, for the Task Group's use, prior to the next meeting.

The committee adjourned at 4:15 pm on July 12 with the Task Groups continuing in breakout meetings. The committee reconvened at 8:00 am on July 13.
There were fourteen members, nine guests and one staff members present.

The committee discussed whether to propose to place the high wind requirements into the existing Chapters of the IRC or in a new Chapter 43.

A motion was made and seconded that a new Chapter 43 will contain all high wind provisions to the fullest extent possible and the existing Chapters of the IRC are to be revised as required, to provide direction to Chapter 43, and correct / eliminate conflicts as needed.
The motion passed by a vote of 8 to 2 with 4 abstains.

B. Schedule

The deadlines for submitting the code changes are March 24, 2006 and August, 2007. These are based on the current 18 month code development cycle.
There is a resolution, before the ICC Members, to change to a 12 month cycle. Should the resolution pass, at the September annual meeting, then the deadlines will be November 2005, November 2006 and November 2007.

Staff will revise the work plan to reflect the Ad Hoc Committee's deadlines.

C. Convert Working Draft Version 1.0 to proposed Chapter 43

Staff will provide an outline of the new Chapter 43 for use by the Task Groups to develop the required code changes.
(See Attachment B)

D. Breakout - (9:30 am – 11:30 am) Task Groups to continue work, review assignments/progress, and make new assignments as required.

The task groups met the previous afternoon to review in detail the areas the assigned areas identified on the matrix for potential code changes.

The need for a definition of High Wind Regions was discussed. The Fenestrations Task Group (Dale Greiner) will develop the definition.

The wood task group (Jeffery Stone) stated they would have a draft within a month. The task group may meet via web base conference or at the annual ICC meeting in Detroit to work on the wood code changes. The wood task group will work with the steel task group (Robert Wills).

The components and cladding task group (Charles Everly) asked that everyone research and send to him any information/specifications for high wind for any of the materials in Section R703.

E. **Report to full committee- Discuss and Review work from breakout session**.

Only the foundations, wood, and fenestrations task groups have reports for the full committee..

Task group Reports

Foundations - Kelly Cobeen (Chairman)

(See Attachment C)

Wood – Jeffery Stone (Chairman)

The Wood Task Group has identified, for possible modification, a list of wood – frame sections of the IRC. **(See Attachment D)**

The Wood Task Group is proposing to reorganize the sections on wood-frame construction by separating general requirements applicable to all wood-frame construction from those of conventional light-frame wood construction. Our proposal would limit conventional construction to areas where the wind speed is less than 100 mph and require engineered design and construction, including the use of *ANSI/AF&PA Wood Frame Construction Manual*, in areas where the wind speed is 100 mph or greater. This format change also required us to address seismic-resistive design and construction issues in the high wind areas.

Fenestrations – Dale Greiner (Chairman)

(See Attachment E)

VIII. NEXT MEETING / LOCATION

The Task Groups will meet via e-mail, web conference, telephone conference or at the ICC annual conference at Detroit, MI.

The Chairman decided that two additional full committee meeting will be needed this year.

The committee unanimously agreed that the next two (2) meeting dates will be:
October 25 -26, 2005
December 13-14, 2005

The location is to be Orlando, FL.
Staff will request ICC Travel Services to use Disney's Yacht Club Resort as the site for the next scheduled meetings.

X. ADJOURN :

Chairman Kopczynski adjourned the meeting at 12:05 pm on Wednesday, July 13.
The foundation task group and others continued breakout meeting in the afternoon.

ATTACHMENT A

The committee reviewed Chapters 1 through 11 of the 2003 *International Residential Code* and identified sections for potential code changes to address high winds. The assigned Task Groups will review these sections and develop code changes as required.

New chapter 43 will contain all high wind provisions to the fullest extent possible. The existing chapters/sections are to be revised as required to create direction to Chapter 43 plus eliminate conflicts and any other corrections as needed.

REVIEW OF 2003 IRC
CHAPTERS 1 – 11 FOR
POTENTIAL CODE CHANGES FOR HIGH WIND

CHAPTER 1 - ADMINISTRATION			
SECTION	**SECTION TITLE**	**TASK GROUP**	**COMMENTS**
R105.2 Building: Items 1 & 2	Work exempt from permit	General (George Wiggins)	Add exception for high wind.
R109	Inspections	General (George Wiggins)	Add inspection due to high wind (see 2006 IRC for changes to this section).
CHAPTER 2 - DEFINITIONS			
R202	DEFINITIONS	General (George Wiggins) All Task Groups	Revise as required. Add new definitions.
CHAPTER 3 - BUILDING PLANNING			
R301.2.1.1	Design criteria	General (George Wiggins) All Task Groups	Revise to direct to high wind provisions. Add wind provisions similar to R301.2.2. Add irregular buildings for high wind.
R301.3	Story height	General (George Wiggins)	Add story height limitations for high wind.
R308	Glazing	Fenestrations (Dale Greiner)	
R309	Garages and carports	Ancillary Structures (Eric Stafford)	
R310	Emergency escape and rescue openings	Fenestrations (Dale Greiner)	Windborne debris?
R311	Means of egress	Fenestrations (Dale Greiner)	Windborne debris?
R323.3.4	Walls below design flood elevation.		Revise as required to address high winds.
CHAPTER 4 - FOUNDATIONS			
Chapter 4 (all) in particular: R401 R402 R403	 General Materials Footings	Foundations (Kelly Cobeen)	Review all of chapter 4

CHAPTER 5 - FLOORS			
R501	General	Wood (Jeffery Stone) Steel (Robert Wills)	Address high wind regions. The wood group will work with the steel group to develop the provisions.
R503 R505	Floor sheathing Steel Floor Framing	Steel (Robert Wills)	Steel Task Group to look at.
CHAPTER 6 - WALL CONSTRUCTION			
R601	General	Masonry (Dennis Graber) Wood (Jeffrey Stone) Steel (Robert Wills) Concrete(Steve Skalko)	Address high wind regions for masonry,wood, steel, and concrete. The wood group will work with the steel group to develop their provisions.
R613	Exterior windows and glass doors	Fenestrations (Dale Greiner)	
CHAPTER 7 - WALL COVERING			
R701	General	Exterior wall covering (Charlie Everley) Ancillary Structures (Eric Stafford)	Address high wind regions for exterior wall coverings. Review FBC Report for additional information. Address high wind for soffits. Add to chap 7 or Chap 43?
Chapter 8 - ROOF-CEILING CONSTRUCTION			
R801	General	Wood (Jeffrey Stone) Steel (Robert Wills)	Address high wind regions for wood and steel. The wood group will work with the steel group to develop their provisions.
R802	Wood roof framing	Wood (Jeffrey Stone)	
CHAPTER 9 - ROOF ASSEMBLIES			
All	All	Roofing (Gary Walker)	Review entire chapter and add direction for high wind.
CHAPTER 10 - CHIMNEYS AND FIREPLACES			
All	All	Ancillary Structures (Eric Stafford)	Review entire chapter and add direction for high wind.
Chapter 11 - ENERGY EFFICENCY			
All	All	Fenestrations (Dale Greiner)	Look at glazing conflict. Fenestration U-factor vs glazed opening protection.
APPENDIX H - PATIO COVERS			
All	All	Ancillary Structures (Eric Stafford)	Review entire chapter and add direction for high wind

ATTACHMENT B

The outline of new Chapter 43 is based on the Working Draft Version 1.0 of the Standard for Residential Construction in High Wind Regions and/or SSTD 10.

The text, plus subsections and/or additional sections, are to be developed by the assigned Task Group for each Section. The assigned Task Groups are as indicated as shown by *[Task Group Name (Chairman)]* at each Section.

CHAPTER 43

CONSTRUCTION IN HIGH WIND REGIONS

SECTION R4301
GENERAL

R4301.1 Scope. The provisions of this chapter shall control the design and construction for buildings and structures of light-framed (wood or steel), masonry, or concrete construction located in high wind regions.

R4301.2 Application.

[General (George Wiggins)}

SECTION R4302
DESIGN PARAMETERS

R4302.1 Generic building geometry.

[General (George Wiggins)}
(W/assist from Materials Groups)

SECTION R4303
DESIGN CRITERIA

R4303.1 Wind loads.

R4303.2 Other loads.

R4303.3 Roof covering loads.

[General (George Wiggins)}
[Loads (Charles Everly)}

SECTION R4304
NONRECTANGULAR BUILDING

R4304.1 General.

R4304.2 Wind perpendicular to common wall.

R4304.3 Wind parallel to common wall.

[General (George Wiggins)}
(W/assist from Loads and Materials Groups)

SECTION R4305
FOUNDATIONS

R4305.1 General.

R4305.2 Application.

R4305.3 Materials and construction.

R4305.4 Slab on grade foundation.

R4305.5 Stem wall foundation.

R4305.6 Crawlspace foundation walls.

R4305.7 Cripple wall foundations.

R4305.8 Basement wall foundations.

R4305.9 Engineered foundations.

[Foundations (Kelly Cobeen)]

SECTION R4306
BUILDINGS WITH WOOD-FRAMED EXTERIOR WALLS

R4306.1 General.

R4306.2 Application.

R4306.3 Foundation provisions.

R4306.4 Protection of openings

R4306.5 Material standards.

R4306.6 Fasteners and connectors.

[Wood (Jeffery Stone)]

SECTION R4307
BUILDINGS WITH COLD-FORMED STEEL-FRAMED EXTERIOR WALLS

R4307.1 General.

R4307.2 Application.

R4307.3 Foundation provisions.

R4307.4 Protection of openings.

R4307.5 Material standards.

R4307.6 Fasteners and connectors.

[Steel (Robert Wills)]

SECTION R4308
BUILDINGS WITH MASONRY EXTERIOR WALLS

R4308.1 General.

R4308.2 Application.

R4308.3 Foundation provisions.

R4308.4 Floor systems.

R4308.5 Wall systems.

R4308.6 Roof-ceiling system.

[Masonry (Dennis Graber)]

SECTION R4309
BUILDINGS WITH CONCRETE EXTERIOR WALLS

R4309.1 General.

R4309.2 Application.

R4309.3 Foundation provisions.

R4309.4 Floor systems.

R4309.5 Wall systems.

R4309.6 Roof-ceiling system.

[Concrete (Steve Skalko)]

SECTION R4310
BUILDINGS WITH COMBINATION MATERIAL EXTERIOR WALLS

R4310.1 General.

R4310.2 Application.

[Ancillary Structures (Eric Stafford)]

SECTION R4311
ANCILLARY STRUCTURES

R4311.1 General.

R4311.2 Application.

[Ancillary Structures (Eric Stafford)]

SECTION R4312
ROOFING

R4312.1 General.

R4312.2 Application.

R4312.3 Weather protection.

R4312.4 Roof sheathing.

R4312.5 Metal accessories.

R4312.6 Flashing.

R4312.7 Fasteners.

R4312.8 Underlayment.

R4312.9 Asphalt shingles.

R4312.10 Concrete and clay roof tile.

R4312.11 Metal roof panel.

R4312.12 Metal roof shingles.

R4312.13 Slate shingles.

R4312.14 Wood shingles.

R4312.15 Wood shakes.

R4312.16 Other roof coverings.

[Roofing (Gary Walker)]

SECTION R4313
FENESTRATION

R4313.1 General.

R4313.2 Application.

R4313.3 Design pressure and windborne debris protection.

R4313.4 Requirements.

R4313.5 Performance and testing requirements.

R4313.6 Windborne debris protection.

R4313.7 Anchorage methods.

R4313.8 Mullions occurring between individual window and door assemblies.

[Fenestrations (Dale Greiner)]

SECTION R4314
EXTERIOR WALL COVERING

R4314.1 General.

R4314.2 Application.

[Component and Cladding (Charles Everly)]

ATTACHMENT C

ICC Consensus Committee on Hurricane Resistant Construction
Foundation Task Group Discussion 7/12/05 & 7/13/05

Task group meeting occurred on both the 12th & 13th. Included for all or portions of the meeting were: Sheila Blake, Marcelino Iglesias, Frank O'Neill, Bob Lutz, Charles Everly, Steve Skalko, Dennis Graber, Mo Madari, James Collins, Kelly Cobeen

Meeting 7/12/05

1) Review of scoping decisions from last meeting: Decisions regarding limiting the scoping were reviewed and confirmed as follows:
Story Height Limits: For wood and steel light frame construction in 140 and 150 mph wind speeds, maximum two stories will be permitted with prescriptive foundations. Three story will require engineered design of the foundation.
Interior Shear Walls: For wood and steel light frame construction, interior shear walls will be required for side wall lengths greater than 30 feet. Note that wind speeds and stories affected will need to be decided based on further development of calculations.

2) Discussion of foundation analysis: Analysis models for foundation sizing were discussed further. Using a design modeling the foundation as a beam (calling this Model C) and interior shear wall for 120 mph exposure C, three story, a slab-on-grade footing was sized as 18" wide by 24" deep with 3#5 top & bottom, an improvement on past sizes. Bob Lutz proposed a new model for calculation of foundation sizing. The model combines an overturning and soil bearing check on a rigid model of the end wall & foundation, with a local shear and flexure check of foundation using shear wall uplift and downward reactions (new approach called Model B).

Comparative studies will be made on foundation size and reinforcing demands resulting from Model A (global overturning, Kelly) Model B (end wall overturning, Bob), and Model C (beam, Kelly). ***Designs using these models will be exchanged by Monday, August 22*** for review by task group members. Models are based on:

- 24' x 50' footprint
- 5:12 roof slope
- 9' first story clear height, 8' upper story clear height
- 12" floor framing depth
- On-grade foundation
- Bldg 1: 3-story, 130 mph, Exposure C
- Bldg 2: 2-story, 150 mph, Exposure C
- ASCE 7 wind loads

Meeting 7/13/05

3) Draft of changes needed to IRC Chapter 4: Changes needed to IRC Chapter 4 were identified. These include an initial statement pointing to the additional requirements of Chapter 43, notes requiring engineered design of some foundation systems in high wind regions, etc. Draft of identified changes will be provided to task group August 22.

4) Review of information in Draft 1 of the standard for use in new Chapter 43. The organization of the foundation chapter in standard draft 1 was reviewed and decided to be an acceptable starting point for foundation material in the new Chapter 43. Provisions need to be added incrementing foundation size by wind speed, exposure and number of stories. Larry Franks will be providing overall Chapter 43 organization. Draft of Chapter 43 material will be circulated on August 22.

5) Phone conference calls will be scheduled for task group discussion following August 22 exchange of design comparisons and code change drafts.

ATTACHMENT D

Section	Current Code Text	*Comment*
	DEFINITIONS	
202		*Important terms used in the code need to be defined. Need to insert definition of conventional light-frame construction. Consult Chapter 23 of Standard Building Code.*
		Important terms used in the code need to be defined. Need to insert definition of balloon-frame construction.
		Important terms used in the code need to be defined. Need to insert definition of platform frame construction.
	BUILDING PLANNING AND DISCUSSION	
301.1	**R301.1 Design.** Buildings and structures, and all parts thereof, shall be constructed to safely support all loads, including dead loads, live loads, roof loads, flood loads, snow loads, wind loads and seismic loads as prescribed by this code. The construction of buildings and structures shall result in a system that provides a complete load path capable of transferring all loads from their point of origin through the load-resisting elements to the foundation.	*ICC-HRC wants to include all high wind issues in Chapter 43 and create pointers in each chapter. Therefore, conventional construction requirements will need to be reviewed to determine if they are impacted by wind speeds of 100 mph or higher.* *In developing code change proposals, the Committee may want to consider HVHZ format of Florida Building Code.* *Verify that clear that the WFCM can be used in lieu of IRC prescriptive provisions.*
301.1.1	**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 in conjunction with these standards the design shall comply with the *International Building Code.* 1. American Forest and Paper Association (AF&PA) *Wood Frame Construction Manual* (WFCM). 2. American Iron and Steel Institute (AISI), *Standard for Cold-Formed Steel Framing—Prescriptive Method for One- and Two-family Dwellings* (COFS/PM).	*The scoping of the IRC vis-à-vis alternate standards needs to be clarified. Even where wind is not a factor, the engineered provisions of the referenced standards should readily be accepted in lieu of the conventional construction provisions that have little or no engineering basis.*
301.1.2	**R301.1.2 Construction systems.** The requirements of this code are based on platform and balloon-frame construction for light-frame buildings. The requirements for concrete and masonry buildings are based on a balloon framing system. Other framing systems must have equivalent detailing to ensure force transfer, continuity and compatible deformations.	*The framing systems of the various building materials should be more clearly differentiated.*

301.2	**R301.2 Climatic and geographic design criteria.** Buildings shall be constructed in accordance with the provisions of this code as limited by the provisions of this section. Additional criteria shall be established by the local jurisdiction and set forth in Table R301.2(1). **R301.2.1Wind limitations.** Buildings and portions thereof shall be limited by wind speed, as defined in Table R301.2(1), and construction methods in accordance with this code. Basic wind speeds shall be determined from Figure R301.2(4). 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 loads for windows, skylights and exterior doors are not otherwise specified, the loads listed in Table R301.2(2) adjusted for height and exposure per Table R301.2(3), shall be used to determine design load performance requirements for windows and doors.	
301.2.1.1	**R301.2.1.1 Design criteria.** Construction in regions where the basic wind speeds from Figure R301.2(4) equal or exceed 110 miles per hour (177.1 km/h) shall be designed in accordance with one of the following: 1. American Forest and Paper Association (AF&PA) *Wood Frame Construction Manual for One- and Two-Family Dwellings* (WFCM); or 2. *Southern Building Code Congress International Standard for Hurricane Resistant Residential Construction* (SSTD 10); or 3. *Minimum Design Loads for Buildings and Other Structures* (ASCE-7); or 4. American Iron and Steel Institute (AISI), *Standard for Cold-Formed Steel Framing—Prescriptive Method for One- and Two-family Dwellings* (COFS/PM). 5. Concrete construction shall be designed in accordance with the provisions of this code.	*Conventional construction should be limited to areas where the wind speed is less than 100 mph.* *Where wind speeds are 100 mph or greater, design and construction needs to be in accordance with listed design standards, special Chapter 43 wind provisions, unless the code section specifically identifies the provisions as applicable to the higher wind regions.*
301.2.1.5	**R301.2.2 Seismic provisions.** The seismic provisions of this code shall apply to buildings constructed in Seismic Design Categories C, D1, and D2, as determined in accordance with this section. Buildings in Seismic Design Category E shall be designed in accordance with the International Building Code, except when the Seismic Design Category is reclassified to a lower Seismic Design Category in accordance with Section R301.2.2.1. Exception: Detached one- and two-family dwellings located in Seismic Design Category C are exempt from the seismic requirements of this code. The weight and irregularity limitations of Section R301.2.2.2 shall apply to buildings in all Seismic Design Categories regulated by the seismic provision of this code. Buildings in Seismic Design Category C shall be constructed in accordance with the additional requirements of Sections R301.2.2.3. Buildings in Seismic Design Categories D1 and D2 shall be constructed in accordance with the additional requirements of Section R301.2.2.4.	*Seismic design in areas where the wind speed is 100 mph or greater should be based on the same engineering system as that of high wind.*

301.2.3	**R301.2.3 Snow loads.** Wood framed construction, cold-formed steel framed construction and masonry and concrete construction in regions with ground snow loads 70 psf (3.35 kN/m2) or less, shall be in accordance with Chapters 5, 6 and 8. Buildings in regions with ground snow loads greater than 70 psf (3.35 kN/m2) shall be designed	*Design for snow loads in areas where the wind speed is 100 mph or greater should be based on the same engineering system as that of other high wind resistive construction..*
301.3	**R301.3 Story height**. Buildings constructed in accordance with these provisions shall be limited to story heights of not more than the following: 1. For wood wall framing, the laterally unsupported bearing wall stud height permitted by Table R602.3(5) plus a height of floor framing not to exceed sixteen inches. **Exception:** For wood framed wall buildings with bracing in accordance with Table R602.10.1, the wall stud clear height used to determine the maximum permitted story height may be increased to 12 feet without requiring an engineered design for the building wind and seismic force resisting systems provided that the length of bracing required by Table R602.10.1 is increased by multiplying by a factor of 1.20. Wall studs are still subject to the requirements of this section. 2. For steel… 3. For masonry… 4. For insulating concrete… Individual walls or walls studs shall be permitted to exceed these limits as permitted by Chapter 6 provisions, provided story heights are not exceeded. An engineered design shall be provided for the wall or wall framing members when they exceed the limits of Chapter 6. Where the story height limits are exceeded, an engineered design shall be provided in accordance with the International Building Code the overall wind and seismic force resisting systems.	*Conventional light-frame construction issues need to be restricted to areas where the wind speed is less than 100 mph. It might also be useful to address story heights and roof slope for counting stories. Further, for purposes of determining uplift, gravity loads, and lateral bracing, attics should be considered as an additional story when the roof slope is steep. The WFCM utilizes this concept and establishes a 6 in 12 roof slope threshold.*
310.4	**R310.4 Bars, grills, covers and screens.** Bars, grills, covers, screens or similar devices are permitted to be placed over emergency escape and rescue openings, bulkhead enclosures, or window wells that serve such openings, provided the minimum net clear opening size complies with Sections R310.1.1 to R310.1.3, and such devices shall be releasable or removable from the inside without the use of a key, tool or force greater than that which is required for normal operation of the escape and rescue opening.	*Exemption is needed for hurricane shutters during the period of time the building is threatened. The exemption from the Florida Building Code should be considered.*
	FLOORS	
501.1	**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 and/or plumbing fixtures and equipment.	*Determine if conventional floor construction is impacted by high wind design issues If it is not impacted by wind, this section needs to be modified to reflect that it is not limited by wind speeds. If floor construction is impacted by wind, the exception is intended to limit application of the conventional construction to low wind areas.*

502.1	**R502.1 Identification**	*General requirements for identification of materials should be separated from conventional construction practices. Section R502 should be reorganized to separate conventional construction practices to engineered construction where wind speeds are 100 mph or greater.*
502.2	**R502.2 Design and construction.** Floors shall be designed and constructed in accordance with the provisions of this chapter, Figure R502.2 and Sections R319 and R320 or in accordance with AF&PA/NDS.	*If conventional construction requirements for floors are limited by wind, then applicability vis-à-vis WFCM needs to be addressed. Otherwise, the modification is intended to recognize the WFCM as an alternate source.*
Figure 502.2	**FIGURE R502.2** **FLOOR CONSTRUCTION**	*The modification is intended to limit application of conventional construction to low wind areas.*
502.2.1	**R502.2.1 Decks.** Where supported by attachment to an exterior wall, decks shall be positively anchored to the primary structure and designed for both vertical and lateral loads as applicable. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. Where positive connection to the primary building structure cannot be verified during inspection, decks shall be self-supporting. For decks with cantilevered framing members, connections to exterior walls or other framing members, shall be designed and constructed to resist uplift resulting from the full live load specified in Table R301.5 acting on the cantilevered portion of the deck.	*Do wind resistance requirements need to be added?*
502.2.3	**R502.3 Allowable joist spans.** Spans for floor joists shall be in accordance with Tables R502.3.1(1) and R502.3.1(2). For other grades and species and for other loading conditions, refer to the AF&PA Span Tables for Joists and Rafters.	*The modification is intended to recognize the WFCM as an alternate source.*
502.3.3	**R502.3.3 Floor cantilevers.** Floor cantilever spans shall not exceed the nominal depth of the wood floor joist. Floor cantilevers constructed in accordance with Table R502.3.3(1) shall be permitted when supporting a light-frame bearing wall and roof only. Floor cantilevers supporting an exterior balcony are permitted to be constructed in accordance with Table R502.3.3(2).	*If 501.1 already limits conventional light-frame construction to areas where wind speeds are less than 100 mph, does this section need to address limitations of WFCM for floor cantilevers in high wind areas? Exception is intended to clarify limitation to conventional construction.*
Table 502.3.3(1)	**TABLE R502.3.3(1)** **CANTILEVER SPANS FOR FLOOR JOISTS SUPPORTING LIGHT-FRAME EXTERIOR BEARING WALL AND ROOF ONLY[a, b, c, f, g, h]** **(Floor Live Load 40 psf, Roof Live Load 20 psf)**	*Modification of title is intended to clarify limitation to conventional construction.*
Table 502.3.3(2)	**TABLE R502.3.3(2)** **CANTILEVER SPANS FOR FLOOR JOISTS SUPPORTING EXTERIOR BALCONY[a, b, e, f]**	*Modification of title is intended to clarify limitation to conventional construction.*
Table	**TABLE R502.5(1)**	*Check to see if this table matches*

502.5(1)	**GIRDER SPANS[a] AND HEADER SPANS[a] FOR EXTERIOR BEARING WALLS (Maximum spans for Douglas fir-larch, hem-fir, southern pine and spruce-pine-fir[b] and required number of jack studs)**	*the WFCM. Modification of title is intended to clarify limitation to conventional construction.*
Table 502.5(2)	**TABLE R502.5(2) GIRDER SPANS[a] AND HEADER SPANS[a] FOR INTERIOR BEARING WALLS (Maximum spans for Douglas fir-larch, hem-fir, southern pine and spruce-pine-fir[b] and required number of jack studs)**	*Check to see if this table matches the WFCM. Modification of title is intended to clarify limitation to conventional construction.*
502.9	**R502.9 Fastening.** Floor framing shall be nailed in accordance with Table R602.3(1). Where posts and beam or girder construction is used to support floor framing, positive connections shall be provided to ensure against uplift and lateral displacement.	*WFCM fastening should control fastening of framing. If 501.1 already limits conventional light-frame construction to areas where wind speeds are less than 100 mph, does this section need to be amended?*
502.10	**R502.10 Framing of openings.** Openings in floor framing shall be framed with a header and trimmer joists. When the header joist span does not exceed 4 feet (1219 mm), the header joist may be a single member the same size as the floor joist. Single trimmer joists may be used to carry a single header joist that is located within 3 feet (914 mm) of the trimmer joist bearing. When the header joist span exceeds 4 feet (1219 mm), the trimmer joists and the header joist shall be doubled and of sufficient cross section to support the floor joists framing into the header. Approved hangers shall be used for the header joist to trimmer joist connections when the header joist span exceeds 6 feet (1829 mm). Tail joists over 12 feet (3658mm) long shall be supported at the header by framing anchors or on ledger strips not less than 2 inches by 2 inches (51 mm by 51 mm).	*If 501.1 already limits conventional light-frame construction to areas where wind speeds are less than 100 mph, does this section need to be amended? If not, we may need to address limitation to diaphragm aspect ratio in high wind areas*
502.11	**R502.11 Wood trusses.**	*This section should be identified as being applicable to all wind zones.*
502.11.4	**R502.11.4 Truss design drawings.** Truss design drawings, prepared in compliance with Section R502.11.1, 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: 1. Slope or depth, span, and spacing. 2. Location of all joints. 3. Required bearing widths. 4. Design loads as applicable. 4.1. Top chord live load (including snow loads). 4.2. Top chord dead load. 4.3. Bottom chord live load. 4.4. Bottom chord dead load. 4.5. Concentrated loads and their points of application. 4.6. Controlling wind and earthquake loads. 5. Adjustments to lumber and joint connector design values for conditions of use. 6. Each reaction force and direction. 7. Joint connector type and description (e.g., size, 1. thickness or gauge); and the dimensioned location	*If floor trusses are affected by high wind, truss drawings should denote wind speed, when appropriate, and uplift loads for fastening at each end of truss.*

	2. of each joint connector except where symmetrically located relative to the joint interface. 8. Lumber size, species and grade for each member. 9. Connection requirements for: 9.1. Truss-to-truss girder. 9.2. Truss ply-to-ply. 9.3. Field splices. 10. Calculated deflection ratio and/or maximum description for live and total load. 11. 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 drawing or on supplemental documents. 12. Required permanent truss member bracing location.	
503.1	**R503.1 Lumber sheathing.** Maximum allowable spans for lumber used as floor sheathing shall conform to Tables R503.1, R503.2.1.1(1) and R503.2.1.1(2).	*Check to see if tables are different from those in WFCM. Add reference to high winds.*
Table 503.2.1.1(2)	**TABLE R503.2.1.1(2) ALLOWABLE SPANS FOR SANDED PLYWOOD COMBINATION SUBFLOOR UNDERLAYMENT[a]**	*Compare with WFCM. If different from that of WFCM, add limitation to wind zones.*
	WALLS	
601.1	**R601.1 Application.** The provisions of this chapter shall control the design and construction of all walls and partitions for all buildings.	*Walls are clearly impacted by wind. Conventional construction needs to be limited to areas where wind speed is less than 100 mph. Issues that are not impacted by wind, need to be separated from those impacted by high wind areas.* *Scoping of Chapter 3 needs to be clarified and pointer to Chapter 43.Section needs to be reorganized to limit conventional construction to lower wind speed areas* *General requirements need to be separated from conventional construction practices and engineered construction in high wind areas..*
602.2	**R602.2 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).	*Limit this to conventional construction and reference to WFCM in high wind areas. Reorganize section.*

602.3	**R602.3 Design and construction.** Exterior walls of wood-frame construction shall be designed and constructed in accordance with the provisions of this chapter and Figures R602.3(1) and R602.3(2) or in accordance with AF&PA's NDS. Components of exterior walls shall be fastened in accordance with Table R602.3(1) through R602.3(4). Exterior walls covered with foam plastic sheathing shall be braced in accordance with Section R602.10. Structural sheathing shall be fastened directly to structural framing members.	*Limit conventional construction to areas where wind speeds are less than 100 mph and reference to WFCM in high wind areas. Reorganize section.*
602.3.1	**R602.3.1 Stud size, height and spacing.** The size, height and spacing of studs shall be in accordance with Table R602.3.(5). **Exceptions:** 1. Utility grade studs shall not be spaced more than 16 inches (406 mm) on center, shall not support more than a roof and ceiling, and shall not exceed 8 feet (2438 mm) in height for exterior walls and load-bearing walls or 10 feet (3048 mm) for interior non-load-bearing walls. 2. Studs more than 10 feet (3048 mm) in height which are in accordance with Table R602.3.1.	*Limit this to conventional construction and reference to WFCM in high wind areas. Reorganize section.*
602 and Tables		*Limit this to conventional construction and reference to WFCM in high wind areas. Reorganize section.*
Figure 602.3(1)	**FIGURE R602.3(1)** **TYPICAL WALL, FLOOR AND ROOF FRAMING**	*This figure may address issues that are not related to wind loads. Clarify use or prohibition in high wind areas.*
Figure 602.3(2)	**FIGURE R602.3(2)** **FRAMING DETAILS**	*This figure may address issues that are not related to wind loads. Clarify use or prohibition in high wind areas.*
Table 602.3.1	**TABLE R602.3.1** **MAXIMUM ALLOWABLE LENGTH OF WOOD WALL STUDS EXPOSED TO WIND SPEEDS OF 100 MPH OR LESS IN SEISMIC DESIGN CATEGORIES A, B, C and D_1**	*Limit this to conventional construction and reference to WFCM in high wind areas. Reorganize section.*
602.5	**R602.5 Interior nonbearing walls.**	*Not impacted by wind*
602.6	**R602.6 Drilling and notching—studs.**	*Not impacted by wind.*
Figure 602.6(1)	**FIGURE R602.6(1)** **NOTCHING AND BORED HOLE LIMITATIONS FOR EXTERIOR WALLS AND BEARING WALLS**	*Not impacted by wind.*
Figure 602.6(2)	**FIGURE R602.6(2)** **NOTCHING AND BORED HOLE LIMITATIONS FOR INTERIOR NONBEARING WALLS**	*Not impacted by wind.*
602.6.1	**R602.6.1 Drilling and notching of top plate.**	*Limit this to conventional construction and reference to WFCM in high wind areas. Reorganize section.*
Figure 602.6.1	**FIGURE R602.6.1** **TOP PLATE FRAMING TO ACCOMMODATE PIPING**	*Limit this to conventional construction and reference to WFCM in high wind areas. Reorganize section.*

602.7	**R602.7 Headers.**	*Limit this to conventional construction and reference to WFCM in high wind areas. Reorganize section.*
Table 602.7.2	**TABLE R602.7.2 MAXIMUM SPANS FOR WOOD STRUCTURAL PANEL BOX HEADERS[a]**	*Limit this to conventional construction and reference to WFCM in high wind areas. Reorganize section.*
Figure 602.7.2	**FIGURE R602.7.2 TYPICAL WOOD STRUCTURAL PANEL BOX HEADER CONSTRUCTION**	*Limit this to conventional construction and reference to WFCM in high wind areas. Reorganize section.*
602.8	**R602.8 Fireblocking required.**	*Not impacted by wind*
602.9	**R602.9 Cripple walls.**	*Limit this to conventional construction and reference to WFCM in high wind areas. Reorganize section.*
602.10	**R602.10Wall bracing.**	*Limit this to conventional construction and reference to WFCM in high wind areas. Reorganize section.*
602.11	**R602.11 Framing and connections for Seismic Design CategoriesD1 andD2.**	*Limit this to conventional construction and reference to WFCM in high wind areas. Reorganize section and reference WFCM, ASCE-7, and IBC.*
602.3	**R602.3 Design and construction where wind speed is 100 mph or greater.**	*Need section addressing design and construction where wind speeds are 100 mph or greater.*
	WALL COVERINGS	
703.3	**R703.3Wood, hardboard and wood structural panel siding.**	*Do specifications for high wind exist?*
703.4	**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.	
Table 703.4	**TABLE R703.4 WEATHER–RESISTANT SIDING ATTACHMENT AND MINIMUM THICKNESS**	*Specifications for high wind?*
703.5	**R703.5Wood shakes and shingles.** Wood shakes and shingles shall conform to CSSB *Grading Rules for Wood Shakes and Shingles.*	*Specifications for high wind?*

	ROOF-CEILING CONSTRUCTION	
801.1	**R801.1 Application.** The provisions of this chapter shall control the design and construction of the roof-ceiling system for all buildings.	*Roof-ceiling construction is clearly impacted by wind. Conventional construction needs to be limited to areas where wind speed is less than 100 mph. Issues that are not impacted by wind, need to be separated from those impacted by high wind areas. Scoping of Chapter 3 needs to be clarified and pointer to Chapter 43.Section needs to be reorganized to limit conventional construction to lower wind speed areas.* *Limit conventional construction to areas where wind speeds are less than 100 mph and reference to WFCM in high wind areas. Reorganize section.*
802.1	**R802.1 Identification.**	*Need to separate general requirements from those related to wind speeds.*
802.2	**R802.2 Design and construction.** Roof-ceilings shall be designed and constructed in accordance with the provisions of this chapter and Figures R606.10(1), R606.10(2) and R606.10(3) or in accordance with AFPA/NDS. Components of roof-ceilings shall be fastened in accordance with Table R602.3(1).	*Conventional construction practices need to be limited to areas where wind speeds are less than 100 mph.*
802.3	**R802.3 Framing details.**	*Engineered design will be needed where wind speeds are 100 mph or greater.*
802.4	**R802.4 Allowable ceiling joist spans.**	*Limit to conventional light-frame wood construction.*
802.5	**R802.5 Allowable rafter spans.**	*Limit to conventional light-frame wood construction.*
802.6	**R802.6 Bearing.**	*Limit to conventional light-frame wood construction or general requirements.*
802.7	**R802.7 Cutting and notching.**	*Limit to conventional light-frame wood construction or general requirements.*
802.8	**R802.8 Lateral support.**	*Limit to conventional light-frame wood construction.*
802.9	**R802.9 Framing of openings.**	*Limit to conventional light-frame wood construction.*
802.10	**R802.10 Wood trusses.**	*This should be a general requirement.*

802.11	**R802.11 Roof tie-down.** **R802.11.1 Uplift resistance.** Roof assemblies which are subject to wind uplift pressures of 20 pounds per square foot (0.958 kN/m2) or greater shall have roof rafters or trusses attached to their supporting wall assemblies by connections capable of providing the resistance required in Table R802.11.Wind uplift pressures shall be determined using an effective wind area of 100 square feet (9.3m2) and Zone 1 in Table R301.2(2), as adjusted for height and exposure per Table R301.2(3). A continuous load path shall be provided to transmit the uplift forces from the rafter or truss ties to the foundation.	*Citing 20 psf uplift pressure is not appropriate for a prescriptive code. Might want to replace 20 psf with wind speed.*
803.1	**R803.1 Lumber sheathing.** Allowable spans for lumber used as roof sheathing shall conform to Table R803.1. Spaced lumber sheathing for wood shingle and shake roofing shall conform to the requirements of Sections R905.7 and R905.8. Spaced lumber sheathing is not allowed in Seismic Design Category D2.	*Limit to conventional light-frame wood construction.*
803.2	**R803.2 Wood structural panel sheathing.**	*Limit to conventional light-frame wood construction or general requirements.*
Table 803.1	**TABLE R803.1** **MINIMUM THICKNESS OF LUMBER ROOF SHEATHING**	*Limit to conventional light-frame wood construction or general requirements.*
	ROOF ASSEMBLIES	
905.2.7.2	**R905.2.7.2 Underlayment and high wind.**	*Should the scoping be reduced to 100 mph?*
905.3.3.3	**R905.3.3.3 Underlayment and high wind.**	*Should the scoping be reduced to 100 mph?*
905.7	**R905.7 Wood shingles.**	*How are wood shingles impacted by high winds?*
905.8	**R905.8 Wood shakes.**	*How are wood shakes impacted by wind?*

ATTACHMENT E

INTERNATIONAL CODE COUNCIL
CONCENSUS COMMITTEE ON HURRICANE RESISTANT CONSTRUCTION

Meeting Minutes for: FENESTRATION TASK GROUP

July 12/13, 2005

July 12, 2005:

- Discussion and review of the IRC and the areas covering possible fenestration issues. Chapter 2, R301, R308, R309, R310, R311, R613, and Chapter 11.

July 13, 2005:
Discussion based on direction from the full Committee to determine where pointers should be applied, sections should be altered or sections should be moved to Chapter 43 has produced the following:

- Chapter 2 Definitions—new definition
  High Wind Reqion-- Regions where the basic wind speeds equal or exceed 100 miles per hour.
- Pointer will be necessary in section R301.2.1.
  Note: For High Wind Regions, the design shall be in accordance with Chapter 43.
- Move R301.2.1.1 to Chapter 43.
- Move R301.2.1.2 to Chapter 43 altering the exception as necessary. (Move Section R301.2.1.2 Internal pressure and its Exception (and possibly alter Exception about 110-mph above not allowed; plywood only – no OSB; panel thickness; fastener types for masonry; add word "temporary") and move Table R301.2.1.2 to Chapter 43.)
- Table R301.2.1.2 should be expanded and reviewed to higher wind speed and thickness of the panel and fastners.
- Duplicate portions of Table 301.2(2)(3) into Chapter 43 as necessary.
- Pointer will be necessary in section R308.6.9.
  Note: Protection in high wind regions is in Chapter 43.
- Pointer will be necessary in section R613.2
  Note: High Wind Regions, refer to Chapter 43.
- In section 613.3, exception 1, change to: 'decorative glazed openings <u>in non-high wind regions.'</u>
- In section R613.4, change reference to Chapter 43. (Change "in accordance with Section R301.2.1.2" to "in accordance with Chapter 43.")
- Move section R613.4.1 to Chapter 43.

The Task Group will consolidate the above proposals and the existing draft to create what will ultimately be in Chapter 43.