3. The use of asphalt shingles and other roof coverings has been successful over these composite insulation panels, so the extra details about vapor retarders, etc. can be eliminated**.**

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB271–06/07
R807.1

Proponent: Rick Davidson, City of Hopkins, MN

Revise as follows:

R807.1 Attic access. Buildings with combustible ceiling or roof construction shall have an attic access opening to attic areas that exceed 30 square feet (2.8m^2) and have a vertical height of 30 inches (762 mm) or greater.

The rough-framed opening shall not be less than 22 inches by 30 inches (559 mm by 762 mm) and shall be located in ~~a hallway or other readily accessible location~~ an approved location. A 30-inch (762 mm) minimum unobstructed headroom in the attic space shall be provided at some point above the access opening. See Section M1305.1.3 for access requirements where mechanical equipment is located in attics.

Reason: The IBC (Section 1208.2) is silent on the matter of the location of attic access. But, in a similar proposal, the IRC Committee expressed concern that removing reference to a hallway, etc., in the IRC would result in the access being placed in a location that would not be useable. However, the reference to "hallway" makes a strong suggestion that the access must be in an interior location when access through a garage attic, a knee wall, or an exterior location may be desirable. The revised text allows the access to be in any location provided the building official approves it. That will allow the building official the opportunity to review the proposed location to determine if it is useable and give greater flexibility as well. This text is also more consistent with generally used code language.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB272–06/07
R807.1

Proponent: Rick Davidson, City of Hopkins, MN

Revise as follows:

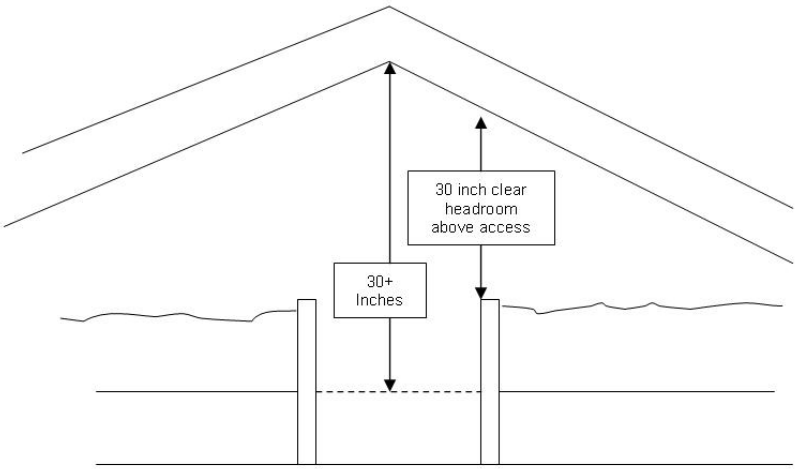
R807.1 Attic access. Buildings with combustible ceiling or roof construction shall have an attic access opening to attic areas that exceed 30 square feet (2.8m^2) and have a vertical height of 30 inches (762 mm) or greater. The vertical height shall be measured from the top of the ceiling framing members to the underside of the roof framing members.

The rough-framed opening shall not be less than 22 inches by 30 inches (559 mm by 762 mm) and shall be located in a hallway or other readily accessible location. When located in a wall, the opening shall be 22 inches wide by 30 inches high. When located in a ceiling, a ~~A~~ 30-inch (762 mm) minimum unobstructed headroom in the attic space shall be provided at some point above the access measured vertically from the bottom of ceiling framing members. See Section M1305.1.3 for access requirements where mechanical equipment is located in attics.

Reason: The code is not clear on how the vertical height should be measured. If you want uniformity and enforceability, the code must stipulate the method. Should it be measured from the bottom of the ceiling joist, the top of the ceiling joist, or the top of the insulation? Should it be measured to the underside of the roof sheathing or the underside of roof framing members? It needs to be verified during the framing inspection so that excludes measurements involving insulation. Since the depth of framing members can approach or exceed one foot, it would seem that a reasonable approach would be to measure from the top of the ceiling members to the underside of the roof members to determine the vertical height. That suggestion is proposed. If you measure from the bottom of the ceiling members to the top of the roof members, you may only have a foot or so of working height.

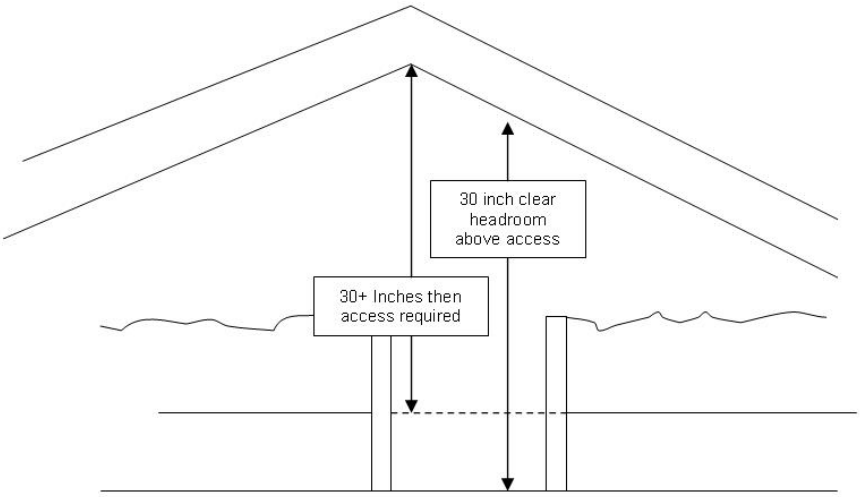
The second modification acknowledges that some attic accesses are through a knee wall and provides direction on the installation of the opening for those situations.

The third modification stipulates that the 30-inch clear headroom above the access be measured from the underside of the ceiling framing members or the lowest point of the attic access. It is common practice where attics are insulated to construct a bulkhead in the access to contain attic insulation. If one were to measure the headroom requirement from the top of the bulkhead, you could conceivably have a situation where you would have to require that the roof framing be raised to achieve 30 inches of headroom. That is unreasonable.



If the headroom measurement was taken from the top of the bulkhead, it is conceivable that the 30 inch height could not be achieved unless the rafters were raised.

Pacific A 1



This drawing indicates how the proposed measurements would be taken. If the height measured from the top of the ceiling members to the underside of the roof members is more than 30 inches, then 30 inches of unobstructed headroom must be provided above the access. This measurement is made from the lower terminus of the access, which is also the bottom of the ceiling framing members.

Pacific A 2

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB273–06/07
R903.2.1

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R903.2.1 Locations. Flashings shall be installed at wall and roof intersections, wherever there is a change in roof slope or direction, this requirement does not apply to hip and ridge junctions, and around roof openings. Where flashing is of metal, the metal shall be corrosion resistant with a thickness not less than ~~0.019 in (0.5 mm) (26 gauge sheet)~~ provided in Section R903.2.2.

Reason: The proposal clarifies the types of flashing materials that are presently recognized in IRC Section R905.4.6 and IBC Sections 1507.5.6, 1507.8.7 and 1507.9.8.

Cost Impact: The code change proposal will not increase the cost of construction. The proposal will allow the use of sheet metal flashing as well as other materials recognized as acceptable as flashing.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB274–06/07
R903.2.2 (New), Table R903.2.3 (New)

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Add new text and table as follows:

R903.2.2 Metal flashing and terminations. Metal flashing and terminations shall be of the material and thickness described in Table R903.2.3, and shall be designed and installed in accordance with this chapter.

TABLE R903.2.3
METAL FLASHING MATERIAL

MATERIAL	MINIMUM THICKNESS (INCHES)	GAGE	WEIGHT (LBS PER SQ FT)
Copper			1 (16 oz)
Aluminum	0.024		
Stainless Steel		28	
Galvanized Steel	0.0179	26 (Zinc Coated G90)	
Aluminum Zinc Coated Steel	0.0179	26 (AZ50 Alum Zinc)	
Zinc Alloy	0.027		
Lead			2.5 (40 oz)
Painted Terne			1.25 (20 oz)

Reason: The proposal provides the materials that are presently recognized in the code as either a flashing material or metal roofing material. The proposal lists the material that can be used as metal flashing in a single location. Other flashing materials (non metal materials) are to be used based on documentation provided by the manufacturer of these flashing materials.

Cost Impact: The code change proposal will not increase the cost of construction. The proposal includes metal flashing materials that are presently approved.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB275–06/07
R903.5 (New), R903.5.1 (New)

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Add new text as follows:

R903.5 Gutters and leaders.

R903.5.1 One and two family dwellings, and private garages. When gutters and leaders are placed on the outside of buildings, the gutters and leaders shall be constructed of metal or approved plastic for outdoor exposure with lapped, soldered or caulked joints and shall be securely fastened to the building with a corrosion resistant fastening device of similar or compatible material to the gutters and downspouts.

(Renumber subsequent sections)

Reason: The criterion for gutters and leaders is optional so that it will apply only when gutters and leaders are installed on the outside of a building.

Providing for the attachment of gutters and leaders is to reduce these building components from becoming flying debris. The requirements for attaching the gutters and leaders are in the *International Building Code*. By including the criteria in the *International Residential Code*, the user does not have to refer to the *International Building Code* for these criteria.

The *International Building Code* in Section 1503.4.1 address the installation of gutters and leaders on buildings other than building covered by the *International Residential Code*.. This section uses similar criteria to that in the *International Building Code* to establish criteria presently not in the *International Building Code*.

Cost Impact: The code change proposal will not increase the cost of construction. The code presently requires that the installation of gutters and leaders are required to resist the wind forces.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB276–06/07

R903.6 (New), R903.6.1 (New), R903.6.2 (New), R903.6.3 (New), R903.6.4 (New), R903.6.5 (New), Table R903.6.5 (New)

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Add new text and table as follows:

R903.6 Gravel stop and drip edge.

R903.6.1 Minimum size. The vertical face of gravel stops and drip edges shall be a minimum of 1-½ inches (38 mm) and shall extend down not less than ½ inch (12.7 mm) below the sheathing or other member immediately contiguous thereto. In all cases, the deck flange shall be not less than 2 inches (51 mm) in width.

R903.6.2 Clearance. Gravel stop or drip edge shall be designed so that the drip line shall have a minimum of $^{3}/_{8}$-inch (9.5 mm) clearance from the structure.

R903.6.3 Installation. Gravel stops or drip edge shall be installed in accordance with the roof cover manufacturer's installation instructions after roofing felts have been applied.

R903.6.4 Joints. Gravel stop and drip edges shall be joined by lapping a minimum of 3 inches (76 mm). Cover and splice plates shall be of the same material as the gravel stop and drip edge, and shall be sized, fabricated and installed to provide a minimum lap of 3 inches (76 mm). For roof slopes less than 2:12 the entire interior of the joint shall be coated with approved flashing cement.

R903.6.5 Attachment. The deck flange shall be nailed with a minimum 12 gauge annular ring shank nail spaced according to Table R903.6.5 unless addressed by the manufacturer's installation instructions. A fastener shall be installed not more than 1 inch (25.4 mm) from the end of each metal profile section where sections are joined with a splice plate. Nails shall be manufactured from similar and/or compatible material to the termination profile. All composite materials shall be fastened with nonferrous nails.

TABLE R903.6.5
FLASHING FASTENER SPACING

FLASHING FASTENER SPACING			
BASIC WIND SPEED	**90 mph to 110 mph**	**Greater than 110 mph to 140 mph**	**Greater than 140 mph to 150 mph**
Maximum Spacing (inches)	6	4	4

(Renumber subsequent sections)

Reason: The proposal will provide a prescriptive installation for the attachment of gravel stops and drip edges to reduce these building components from becoming flying debris. The fastener spacing has been considered by the ICC Hurricane Construction Committee's latest recommendations and these spacing were recommended as of the February meeting.

Cost Impact: The code change proposal will not increase the cost of construction. Gravel stops and drip edges are presently required to be attached to the building to resist the wind forces. This proposal will allow the user to attach thee components using a code prescriptive design instead of having to design the attachment system.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB277–06/07
R904.5 (New)

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Add new text as follows:

R904.5 Safety factor. The minimum safety factor for determining the allowable resistance of roof covering systems based on physical tests shall use a safety factor of 2.

Reason: The *International Residential Code* does not define the safety factor for roof coverings. Test reports normally provide the ultimate load to which the roof covering has resisted. This proposal will establish the minimum safety factor for the roof assembly, whether applied by the laboratory or by the designer. The safety factor of 2 is based the recommended safety factor used by Factory Mutual. A safety factor of 2 is being used by ICC Evaluation Service, Inc. in the evaluation of roof covering in the for roof tile, single-ply, built-up, etc. This section will establish the minimum safety factor for tested roof covering assemblies.

The proposal does not affect the safety factor used for components in a roof assembly. Components in a roof assembly may require a larger safety factor when individually evaluated. For example, a component such as a fastener such as a nail or screw may need be have a safety factor of 3, 4, or 6 applied to its individual test results. The safety factor of 2 is applied only to the roof assembly and not to individual components, since in a roof assembly the effect of a failure of a single component will normally not cause the entire roof assembly to fail.

Cost Impact: There should be no cost increase in the application of this safety factor since a safety factor of 2 is being used by ICC-ES in the evaluation of most roof coverings.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB278–06/07
R904.6 (New), R904.6.1 (New), R904.6.2 (New), R904.6.3 (New), Chapter 43 (New)

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Add new text and standard as follows:

R904.6 Fasteners.

R904.6.1 Nails. Nails shall be corrosion resistant nails conforming to ASTM F 1667. The corrosion resistance shall meet ASTM A 641, Class I or an equal corrosion resistance by coating, electro galvanization, mechanical galvanization, hot dipped galvanization, stainless steel, nonferrous metal and alloys or other suitable corrosion-resistant material.

R904.6.2 Screws. Wood screws shall be corrosion resistant screws conforming to ANSI/ASME B 18.6.1. The corrosion resistance shall meet ASTM A 641, Class 1 or an equal corrosion resistance by coating, electro galvanization, mechanical galvanization, stainless steel, nonferrous metal or other suitable corrosion resistant material.

R904.6.3 Clips. Clips shall be corrosion resistant clips. The corrosion resistance shall be meet 1.50 oz per sq ft (0.458 kg/m²) according to ASTM A 153 or an equal corrosion resistance by coating, electro galvanization, mechanical galvanization, hot dipped galvanization, stainless steel, nonferrous metals and alloys or other suitable corrosion resistant material. Stainless steel clips shall conform to ASTM A 167, Type 304.

CHAPTER 43
REFERENCED STANDARDS

ASME B 18.6.1-1981 Wood Screws (inch series

Reason: The proposal is to provide minimum criteria for these fasteners and their minimum corrosion protection. The individual roof covering sections provide specific criteria for fasteners used with that roof covering. Which will govern the installation, but if a situation develops that does not provide the criteria for the fastener then this section will provide the minimum criteria.

Cost Impact: The code change proposal will not increase the cost of construction. The application of these requirements will only apply if the manufacturer or other code section does not provide specific criteria for the fasteners. If the manufacturer or code section provides specific fasteners then the specific criteria will supersede these general criteria.

Analysis: Results of review of the proposed standard will be posted on the ICC website by August 20, 2006.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB279–06/07
R905.2.5

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.2.5 Fasteners. Fasteners for asphalt shingles shall be galvanized steel, stainless steel, aluminum or copper roofing nails, minimum 12 gage [0.105 inch (2.67 mm)] shank with a minimum 3/8-inch (9.5 mm) diameter head, ASTM F 1667, of a length to penetrate through the roofing materials and a minimum of ¾ inch (19.1 mm) into the roof sheathing. Where the roof sheathing is less than ¾ inch (19.1 mm) thick, the fasteners shall penetrate through the sheathing. Fasteners shall comply with ASTM F 1667.

Exception: If the architectural appearance is to be preserved from below, an alternate method of attachment complying with the wind load requirements of Chapter 3 may be proposed unless otherwise addressed in Chapter 9. The alternative attachment shall be prepared, signed and sealed by a registered design professional.

Reason: The exception is to recognize an alternate method used under the Florida Building Code for installing asphalt shingles where the sheathing is also the interior finish. Where the fastener length would cause the fastener to penetrate the sheathing (interior finish), the interior finish would destroyed or damaged the appearance of the interior finish. This exception provides a method for installing the asphalt shingles without destroying or damaging the interior finish. This exception will recognize an alternative with having to result to Section R104.11 Alternative materials, design and methods of construction and equipment.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB280–06/07
R905.2.6, Table R905.2.6 (New), Chapter 43

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

1. Delete and substitute as follows:

R905.2.6 Attachment. ~~Asphalt shingles shall have the minimum number of fasteners required by the manufacturer. For normal application, asphalt shingles shall be secured to the roof with not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 20 units vertical in 12 units horizontal (20:12), special methods of fastening are required. For roofs located where the basic wind speed per Figure R301.2(4) is 110 mph (177 km/h) or greater or special methods of fastening are required. Special fastening methods shall be tested in accordance with ASTM D 3161 Class F. Asphalt shingle wrappers shall bear a label indicating compliance with ASTM D 3161 Class F.~~ Asphalt shingles shall be classified in accordance with ASTM D 3161 or ASTM D 7158 to resist the maximum basic wind speed in accordance with Table R905.2.6. Asphalt shingles shall be installed using the minimum number of fasteners determined by testing for the classification required to resist the maximum basic wind speed.

The intersections of shingles with eaves, rakes, valleys, and gable ends and starter strips shall be set in a minimum 4-inch wide strip of approved flashing cement. Maximum thickness of flashing cement shall be ⅛ inch. Shingles shall not extend more than ¼ inch beyond the eave drip.

2. Add new table as follows:

TABLE R905.2.6
MINIMUM ATTACHMENT FOR ASPHALT SHINGLES

MAXIMUM BASIC WIND SPEED (FIGURE R301.2(4)	CLASSIFICATION IN ACCORDANCE TO ASTM D 3161	CLASSIFICATION IN ACCORDANCE TO ASTM D 7158
100	Class D	Class G
110	Class F	Class G
120	Class F	Class G
150	---	Class H

CHAPTER 43
REFERENCED STANDARDS

ASTM D7158-05 Standard Test Method for Wind Resistance Asphalt Shingles (Uplift Force/Uplift Resistance Method

Reason: This change adds a new consensus standard, ASTM D7158 as an alternate test method for wind resistance of asphalt shingles. ASTM D7158 quantifies the wind uplift force and the shingle sealant's bond strength and reflects the most up-to-date method for assessing wind performance of asphalt shingles. ASTM D7158 covers the procedure for calculating the wind resistance of asphalt shingles when applied in accordance with the manufacturer's instructions, and sealed under defined conditions. The method calculates the uplift force exerted on the shingle by the action of wind at a specified velocity, and compares that to the mechanical uplift resistance of the shingle. A shingle is determined to be wind resistant at a specified basic wind speed when the measured uplift resistance exceeds the calculated uplift force for that velocity (3-second gust, ASCE 7).

ASTM D 7158 mandates wrapper labeling requirement for field identification of the shingle classification.

The criteria for installation at intersections, placement of flashing cement, and shingle overhang at the eave drip was taken from the *Florida Building Code*. These attachment details are used to reduce the blow off of shingles.

Cost Impact: The code change proposal will not increase the cost of construction because the installation of asphalt shingles is required to resist the design wind speed.

Analysis: Results of review of the proposed standard will be posted on the ICC website by August 20, 2006.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB281–06/07

R905.2.6.1 (New), Table R905.2.6.1 (New), Chapter 43

Proponent: Bob Eugene, Underwriters Laboratories, Inc.

Add new text as follows:

R905.2.6.1 Alternative test method. Testing the acceptability of special fastening methods using the methodology in this section is permitted. The wind induced uplift force on the shingle shall be determined using the method in UL 2390. The resistance of the shingle to the uplift force shall be determined using ASTM D 6381. Shingles passing this test shall be considered suitable for roofs located where the basic wind speed per Figure R301.2(4) is as given in Table R905.2.6.1.

Classification requires that the resistance of the shingle to wind uplift measured using the method in ASTM D 6381 exceed the calculated load imposed by wind in the applicable zone as determined using UL 2390.

Classification by this method applies to buildings with wind exposures B and C only. Wrappers of shingle bundles qualified using this alternate method shall be labeled with the tested wind classification and reference UL 2390/ASTM D 6381.

TABLE R905.2.6.1
ROOF COVERING CLASSIFICATION USING ALTERNATIVE METHOD

MAXIMUM BASIC WIND SPEED (MPH)	ASTM D 6381 CLASSIFICATION
90	Class D
120	Class G
150	Class H

D6381-03 Standard Test Method for Measurement of Asphalt Shingle Mechanical Uplift Resistance

UL 2390-04 Test Method for Measuring Wind Uplift Coefficients for Asphalt Shingles with Sealed Tabs

Reason: The purpose of this change is to add the new classification system for shingles that will cover the test methods that were added to the IBC Section 1504.

This will not add cost to the shingles and will provide products that are more specific to the geographic areas and wind zones where required. This change will allow the contractor and the code official to quickly determine if the shingles being installed meet the requirements of the code

UL 2390 and ASTM D6381 were developed over a 14-year period with input from code officials, wind engineers, and the insurance industry. They were added to the IBC in 2003-04. Products that meet classifications are already widely available.

Bibliography: IBC 1504.2.1

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

Analysis: Results of review of the proposed standard will be posted on the ICC website by August 20, 2006.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB282–06/07
R905.2.7

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.2.7 Underlayment application. For roof slopes from two units vertical in 12 units horizontal (17-percent slope), up to four units vertical in 12 units horizontal (33-percent slope), underlayment shall be two layers applied in the following manner. Apply a 19-inch (483 mm) strip of underlayment felt parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eave, apply 36-inch-wide (914 mm) sheets of underlayment, overlapping successive sheets 19 inches (483 mm), and fastened sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. For roof slopes of four units vertical in 12 units horizontal (33-percent slope) or greater, underlayment shall be one layer applied in the following manner. Underlayment shall be applied shingle fashion, parallel to and starting from the eave and using a minimum horizontal lap of ~~lapped~~ 2 inches (51 mm) and a minimum end lap of 6 inches (150 mm), fastened sufficiently to hold in place. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be offset by 6 feet (1829 mm).

Reason: The horizontal lap has been clarified that the lap is a minimum 2 inches and not an absolute dimension of 2 inches. The end lap of 6 inches has been added to provide a minimum dimension for the end lap.

Cost Impact: The code change proposal will not increase the cost of construction. The proposal is to clarify the minimum dimensions for the horizontal and vertical laps.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB283–06/07
R905.2.7.2

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Delete without substitution:

~~**R905.2.7.2 Underlayment and high wind.** Underlayment applied in areas subject to high winds [greater than 100 mph (177 km/h) per Figure R301.2(4) shall be applied with corrosion-resistant fasteners in accordance with manufacture's installation instructions. Fasteners are to be applied along the overlap not farther apart than 36 inches (914 mm) on center.~~

Reason: This section is no longer necessary with the approval of Section R905.2.6. Since the installation of asphalt shingles is to be based on the test results of either ASTM D 3161 or ASTM D 7158, the underlayment only needs to be "fastened sufficiently to hold in place" until the asphalt shingles are installed. The attachment system for the asphalt shingles will secure both the underlayment and the asphalt shingles for the design wind speeds that the shingle is classified.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB284–06/07
R905.2.8.6 (New)

Proponents: Matthew T. Skowron, City of Kerrville, TX; Roger Vermillion, City of Tempe, AZ, representing the Arizona Building Officials

Add new text as follows:

R905.2.8.6 Drip edge. Provide drip edge at eaves and gables of shingle roofs. Overlap to be a minimum of 2 inches (51 mm). Eave drip edges shall extend 0.25 inch (6.4 mm) below sheathing and extend back on the roof a minimum of 2 inches (51 mm). Drip edge shall be mechanically fastened a maximum of 12 inches (305 mm) o.c.

Reason: Drip edge is not located in the IRC, therefore this cannot be enforced in residential construction. There is no requirement in the IRC for drip edge to protect the underlayment from rotting and termite damage.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB285–06/07
R905.2.8.6 (New)

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Add new text as follows:

R905.2.8.6 Drip edge. Provide drip edge at eaves and gables of shingle roofs. Overlap to be a minimum of 3 inches (76 mm). Eave drip edges shall extend ½ inch (13 mm) below sheathing and extend back on the roof a minimum of 2 inches (51 mm). Drip edge at eaves shall be permitted to be installed either over or under the underlayment. If installed over the underlayment, there shall be a minimum 4 inches (51 mm) width of roof cement installed over the drip edge flange. Drip edge shall be mechanically fastened a maximum of 12 inches (305 mm) on center. Where the basic wind speed per Figure R301.2(4) is 110 mph (177 km/h) or greater or the mean roof height exceeds 33 feet (10 058 mm), drip edges shall be mechanically fastened a maximum of 4 inches (102 mm) on center,

Reason: The *International Building Code* requires the installation of drip edges with shingles. The *International Residential Code* should require the same for a shingle roof on a residence. These criteria were taken from the IBC Section 1507.2.9.3. Modifications to the criteria in Section 1507.2.9.3 were based on recommendations for use in high wind regions.

Cost Impact: The code change proposal will not increase the cost of construction. The installation of a drip edge is required under the IBC for building using shingle roofs. The same minimum criteria should be required for a residence. The Code already requires that each building component is to be designed and installed to resist the design wind. By providing prescriptive criteria, the IRC allows the user to either use the prescriptive criteria or design an attachment system for the drip edge.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB286–06/07
R905.3

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.3 Clay and concrete tile. The installation of clay and concrete shall comply with the provisions of this section. ~~Clay roof tile shall comply with ASTM C1167.~~

Reason: This proposal will remove the standard that is already covered in IRC Section R905.3.4. IRC Section R905.3.4 references ASTM C 1167 for the manufacture of clay roof tile.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB287–06/07

R905.3.8 (New), R905.3.8.1 (New), R905.3.8.2 (New)

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Add new text as follows:

R905.3.8 Hip and ridge tiles. Hip and ridge tiles installed where the basic wind speed exceeds 100 mph shall be secured to hip and ridge boards attached to the roof framing per procedure 1 or 2 or installed in a full bed of mortar per procedure 3.

R905.3.8.1 Hip and ridge boards. Hip and ridge boards shall be attached to the roof framing to resist the uplift pressure listed in the appropriate Table R301.2(2) assuming the exposed width of the hip/ridge tile is 1 foot (304.8 mm). For installations not covered in Table **R301.2(2)**, the uplift pressure for the hip/ridge tile shall be determined in accordance with Section **1609** of the ***International Building Code*** as a non air-permeable roof covering based on the actual exposed width of the tile.

R905.3.8.2 Installing hip and ridge tiles. Hip and ridge tiles shall be installed using either procedure 1, 2, or 3:

1. **Mechanically fastened hip/ridge tiles.** Mechanically fastened hip/ridge tiles shall use a wood ridge board and either nails or screws to secure the hip/ridge tiles. Drill a $^{3}/_{16}$" hole in the lower one-third of the hip/ridge starter tile. Use a #8 wood screw or a 10d ring shank nail and secure the starter tile at both the drilled hole in the lower third of the tile and in the preformed hole at the head of the tile. The remaining hip/ridge tiles are to be installed with a minimum 2" headlap unless the roof tile manufacturer recommends a different headlap. Place the nose of each subsequent hip/ridge tile into a 4" to 5" bead of roof tile adhesive along the head of the lower tile. The head of each subsequent hip/ridge tile is to be secured using a #8 wood screw or a 10d ring shank nail. Fasteners are to have a minimum embedment of ¾ into the roof framing. Seal the head of the fastener with a UV resistant sealant.

2. **Adhesive set hip/ridge tiles.** Adhesive set hip/ridge tiles shall use a wood or metal ridge board and an approved expansive adhesive to secure the hip/ridge tiles to the hip/ridge board. Install the hip/ridge starter tile by applying a bead or paddy of an approved expansive roof tile adhesive along the hip/ridge board for the entire length of the starter tile. Center the hip/ridge starter tile over the hip/ridge board and center the hip/ridge starter tile in place. The remaining hip/ridge tiles are to be installed with a minimum 2" headlap unless the roof tile manufacturer recommends a different headlap using one of the following methods.

   Procedure 1: Apply a bead or paddy of an approved expansive adhesive along hip/ridge board for the entire length of the hip/ridge tile and center the hip/ridge board in place.

   Procedure 2: Place a 4" to 5" bead or paddy of approved expansive adhesive between the head of the lower hip/ridge tile and the hip/ridge board. Center and place the head of this hip/ridge in the bead or paddy. Place a 4" to 5" bead or paddy an approved expansive adhesive on the head of the lower tile and center and place the overlap of the nose of the upper tile into the bead or paddy. Fasteners shall be installed in the hip/ridge tiles on roof slopes greater than 7:12. These fasteners shall be sufficient to prevent the hip/ridge tiles from sliding while the adhesive cures.

3. **Mortar set hip/ridge tiles.** Install the hip/ridge starter tile by placing a full bed of approved mortar under the entire length of the hip/ridge tile. Within 2 minutes of placing the bed of mortar embed the hip/ridge starter tile into the solid bed of mortar. The remaining hip/ridge tiles are to be installed with a full bed of approved mortar under the entire length of the hip/ridge tile with a minimum 2" headlap unless the roof tile manufacturer recommends a different headlap. Tiles shall be embedded in the mortar within 2 minutes of placing the mortar. The entire unexposed surface of the hip/ridge shall be in contact with the mortar bed. Fasteners shall be installed in the hip/ridge tiles on roof slopes greater than 7:12. These fasteners shall be sufficient to prevent the hip/ridge tiles from sliding while the mortar cures.

(Renumber existing R905.3.8 to R905.3.9)

Reason: Hip and ridge tiles are subjected to the largest wind forces on a roof. The Florida Department of Community Affairs in cooperation with the roof tile industry has developed three procedures for securing hip and ridge tiles. The prescriptive information provided in this section is a summary of the installation procedures. Since the prescriptive procedures are not in a consensus document, this summary is being provide to improve the attachment of hip and ridge tile under the *International Residential Code*.

Cost Impact: The code change proposal will increase the cost of construction for the installation of hip and ridge roof tiles. The increased cost is necessary to reduce the loss of hip and ridge tiles when exposed to high winds. The cost increase will depend on the procedure used.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB288–06/07
R905.4.3

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.4.3 Underlayment. Underlayment shall comply with ASTM D 226, Type I or Type II, ~~or~~ ASTM D 4869, Type I or II or Type II or ASTM D 1970. Underlayment shall be installed in accordance with the manufacturer's installation instructions.

Exception: Detached accessory structures that contain no conditioned floor area.

Reason: This proposal allows the use of two additional types of underlayment that have proven acceptable. The proposal also established the installation instructions for the underlaymnet are to be the manufacturer's instructions.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB289–06/07
R905.4.5

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.4.5 Application. Metal roof shingles shall be ~~secured to the roof~~ installed in accordance with this chapter and the approved manufacturer's installation instructions. The installation instructions shall state the allowable uplift resistance for the attachment system. The installation of metal roof shingles shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2).

Reason: The proposal will require that the manufacturer's installation instructions provide sufficient information for the permit applicant and the Building Official can verify the allowable uplift resistance with the uplift resistance in Table R301.2(2).

Cost Impact: The code change proposal will not increase the cost of construction. Metal roof shingles are required to have an attachment system capable of resisting the wind forces defined in the Code. This proposal provides the cross-reference for the manufacturer to the Code table for the minimum wind forces. The manufacturer can use this table or analyze the wind forces per ASCE 7.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB290–06/07
R905.5.5

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.5.5 Application. Mineral-surfaced roll roofing shall be installed in accordance with this chapter and the manufacturer's installation instructions.The installation instructions shall state the allowable uplift resistance for the attachment system. The installation of mineral-surfaced roll roofing shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2).

Reason: The proposal will require that the manufacturer's installation instructions provide sufficient information for the permit applicant and the Building Official can verify the allowable uplift resistance with the uplift resistance in Table R301.2(2).

Cost Impact: The code change proposal will not increase the cost of construction. Mineral-surfaced roll roofing is required to have an attachment system capable of resisting the wind forces defined in the code. This proposal provides the cross-reference for the manufacturer to the code table for the minimum wind forces. The manufacturer can use this table or analyze the wind forces per ASCE 7.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB291–06/07
R905.6.3

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.6.3 Underlayment. Underlayment shall comply with ASTM D 226, Type I or ASTM D 4869, Type I or II. Underlayment shall be installed in accordance with the manufacturer's installation instructions.

Reason: The proposal established the installation instructions for the underlaymnet are to be the manufacturer's instructions,

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB292–06/07
R905.6.5

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.6.5 ~~Application~~ Attachment. Slate and slate-type shingles shall be installed in accordance with this chapter and the manufacturer's installation instructions. The installations instruction shall state the allowable uplift resistance for the attachment system. The installation of slate and slate-type shingles shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2). Minimum headlap for slate shingles shall be in accordance with Table R905.6.5. ~~Slate shingles shall be secured to the roof with two fasteners per shingle. Slate shingles shall be installed in accordance with this chapter and the manufacturer's installation instructions.~~

Reason: The proposal will require that the manufacturer's installation instructions provide sufficient information for the permit applicant and the Building Official can verify the allowable uplift resistance with the uplift resistance in Table R301.2(2).

Cost Impact: The code change proposal will not increase the cost of construction. Slate and slate-type shingles are required to have an attachment system capable of resisting the wind forces defined in the Code. This proposal provides the cross-reference for the manufacturer to the Code table for the minimum wind forces. The manufacturer can use this table or analyze the wind forces per ASCE 7.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB293–06/07
R905.6.6

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.6.6 Flashing. Flashing and counter flashing shall be made with sheet metal. Valley flashing shall be a minimum of 16 ~~15~~ inches (406 mm ~~381 mm~~) wide. Valley and flashing metal shall be a minimum ~~uncoated~~ thickness ~~of 0.017-inch (0.5 mm) zinc coated G90~~ provided in Table R903.2.2. Chimneys, stucco or brick walls shall have a minimum of two plies of felt for a cap flashing consisting of a 4-inch-wide (102 mm) strip of felt set in plastic cement and extending 1-inch (25 mm) above the first felt and a top coating of plastic cement. The felt shall extend over the base flashing a minimum of 2 inches (51 mm).

Reason: The valley flashing was increased from 15 inches to 16 inches to be consistent with the valley flashing requirements for other roof coverings. The metal acceptable for valley and flashing material has been expanded to any metal that is acceptable for a metal roof covering. This is done by referencing Table R903.2.2. The overlap of the felt has been clarified as a minimum of 2 inches instead of an absolute dimension of 2 inches.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB294–06/07
R905.7.5

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.7.5 Application. Attachment in accordance with this section shall be used for roofs with a mean roof height of 40 feet or less and in regions with a basic wind speed of 100 mph or less. Wood shingles shall be installed according to this ~~chapter~~ section and the manufacturer's installation instructions. Wood shingles shall be laid with a side lap not less than 1½ inches (38 mm) between joints in courses, and no two joints in any three adjacent courses shall be in direct alignment. Spacing between shingles shall not be less than ¼ inch to 3/8 inch (6 mm to 10 mm). Weather exposure for wood shingles shall not exceed those set in Table R905.7.5. Fasteners for wood shingles shall be corrosion-resistant with a minimum penetration of ½ inch (12.7 mm) into the sheathing. For sheathing less than ½ inch (12.7 mm) in thickness, the fasteners shall extend through the sheathing. Wood shingles shall be attached to the roof with two fasteners per shingle, positioned no more than 3/4 inch (19.1 mm) from each edge and no more than 1 inch (25.4 mm) above the exposure line.

Reason: The Code does not indicate allowable resistance that the attachment described in this section is capable of resisting. Testing performed by the Cedar Shake and Shingle Bureau indicates that the attachment system described should be limited. Based on the satisfactory experience of wood shingles using this attachment system in portion of the country not subjected to extreme winds, the attachment system was limited to installation where the roof has a mean roof height of 40 feet or less and in the basic wind speed of 100 mph or less.

Cost Impact: The code change proposal will not increase the cost of construction. This proposal defines the limit to which this installation of wood shingles complies with the code for resistance to wind forces.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB295–06/07
R905.7.6, R905.7.6.1 (New)

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

1. Revise as follows:

R905.7.6 ~~Valley flashing~~ Flashing. ~~Roof flashing shall be not less than No. 26 gage [0.019 inches (0.48 mm)] corrosion-resistant sheet metal and shall extend 10 inches (254 mm) from the centerline each way for roofs having slopes less than 12 units vertical in 12 units horizontal (100-percent slope), and 7 inches (178 mm) from the centerline each way for slopes of 12 units vertical in 12 units horizontal and greater. Sections of flashing shall have an end lap of not less than 4 inches (102 mm).~~ At the juncture of the roof and vertical surfaces, flashing and counter flashing shall be provided in accordance with the manufacturer's installation instructions, and where of metal, shall be in accordance with Table R903.2.2.

2. Add new text as follows:

R905.7.6.1 Valley flashing. Valley flashing shall extend at least 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) underlayment of one layer of ASTM D 226 Type I underlayment running the full length of the valley, in addition to other required underlayment. Valley flashing and flashing metal shall be a minimum thickness as provided in Table R903.2.2 for nonferrous metal or stainless steel.

Reason: This proposal is to coordinate the requirements of the *International Building Code* with the *International Residential Code* so that both codes have identical criteria for flashing of wood shingles. Section R905.7.6 is the first sentence from IBC Section 1507.8.7 and Section R905.7.6.1 is the remainder of IBC Section 1507.8.7.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB296–06/07

R905.7.6 (New), R905.7.6.1 (New), R905.7.6.1.1 (New), R905.7.6.1.2 (New), R905.7.6.1.3 (New), R905.7.6.1.4 (New), Chapter 43

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Add new text and standard as follows:

R905.7.6 Attachment to develop a maximum of 45 psf of wind resistance. Wood shingles installed in accordance with Table R905.7.5 and the requirements of this section have an allowable uplift resistance of 45 psf. The installation of wood shingles shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2)

R905.7.6.1 Fasteners.

R905.7.6.1.1 Nails. Nails to attach the wood shakes shall be 3d stainless steel ring shank nails. The nails shall have sufficient length to penetrate through the wood shakes and shall penetrate through the sheathing.

R905.7.6.1.2 Screws. Screws to attach the battens to the framing shall be No. 8 by 2-½ inches long corrosion resistant wood screws. Wood screws shall be corrosion resistant screws conforming to ANSI/ASME B 18.6.1. The corrosion resistance shall meet ASTM A 641, Class 1 or an equal corrosion resistance by coating, electro galvanization, mechanical galvanization, stainless steel, nonferrous metal or other suitable corrosion resistant material.

R905.7.6.1.3 Wood battens. 1 x 4 wood battens shall be attached to the wood joists with 2 screws per joist. The first batten was located 6 inches from the outer edge of the wood joist. Second batten shall be spaced 1-¼ inches from the first batten. The remaining battens shall be spaced a maximum 2 inches apart, except the last one which shall be spaced no greater than ¾ inches from the previous batten.

R905.7.6.1.4 Shingles. Shingles shall be attached to the battens with 2 nails for each shingle placed 1 1/2 inch above the exposure line. The nails shall be ¾ to 1 inch from the shingle edges.

(Renumber existing R905.7.6)

CHAPTER 43
REFERENCED STANDARDS

ASME B 18.6.1 Wood Screws (inch series)

Reason: The Cedar Shake and Shingle Bureau provided UL test report dated August 24, 2004 for the installation of wood shingles. Based on this test report the allowable uplift resistance using a safety factor of 2 is 45 psf. The information above describes the installation used to obtain this allowable uplift resistance.

Cost Impact: The code change proposal will not increase the cost of construction. The prescriptive criteria in this proposal are necessary to develop an allowable uplift resistance of 45 psf.

Analysis: Results of review of the proposed standard will be posted on the ICC website by August 20, 2006.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB297–06/07

R905.8.2

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.8.2 Deck slope. Wood shakes shall only be used on slopes of ~~three~~ four (4) units vertical in twelve (12) units horizontal (~~25~~ 33-percent slope) or greater.

Reason: The Cedar Shake and Shingle Bureau recommended that the roof slope for wood shakes to limits to 4:12 or greater.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB298–06/07
R905.8.6

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.8.6 Application. Attachment in accordance with this section shall be used for roofs with a mean roof height of 40 feet or less and in regions with a basic wind speed of 100 mph or less. Wood shakes shall be installed according to this ~~chapter~~ section and the manufacturer's installation instructions. Wood shakes shall be laid with a side lap not less than 1½ inches (38 mm) between joints in adjacent courses. Spacing between shakes shall be ⅛ to ⅝ inch (3 mm to 16 mm) for shakes and taper sawn of naturally durable wood and shall be ¼ to ⅜ inch (6 mm to 10 mm) for preservative treated taper sawn shakes. Weather exposure for wood shingles shall not exceed those set in Table R905.8.6. Fasteners for wood shakes shall be corrosion-resistant with a minimum penetration of ½ inch (12.7 mm) into the sheathing. For sheathing less than ½ inch (12.7 mm) in thickness, the fasteners shall extend through the sheathing. Wood shakes shall be attached to the roof with two fasteners per shake, positioned no more than 1 inch (25 mm) from each edge and no more than 2 inch (51 mm) above the exposure line.

Reason: The Code does not indicate allowable resistance that the attachment described in this section is capable of resisting. Testing performed by the Cedar Shake and Shingle Bureau indicates that the attachment system described should be limited. Based on the satisfactory experience of wood shakes using this attachment system in portion of the country not subjected to extreme winds, the attachment system was limited to installation where the roof has a mean roof height of 40 feet or less and in the basic wind speed of 100 mph or less.

Cost Impact: The code change proposal will not increase the cost of construction. This proposal defines the limit to which this installation of wood shakes complies with the code for resistance to wind forces.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB299–06/07
R905.8.7 (New), R905.8.7.1 (New), R905.8.7.1.1 (New), R905.8.7.1.2 (New), R905.8.7.2 (New), R905.8.7.3 (New), Chapter 43

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Add new text and standard as follows:

R905.8.7 Attachment to develop a maximum of 90 psf of wind resistance. Wood shakes installed in accordance with Table R905.8.6 and the requirements of this section have an allowable uplift resistance of 90 psf. The installation of wood shakes shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2)

R905.8.7.1 Fasteners.

R905.8.7.1.1 Nails. Nails to attach the wood shakes shall be 6d stainless steel ring shank nails. The nails shall have sufficient length to penetrate through the wood shakes and shall penetrate through the sheathing.

R905.8.7.1.2 Screws. Screws to attach the battens to the framing shall be No. 8 by 2-½ inches long corrosion resistant wood screws. Wood screws shall be corrosion resistant screws conforming to ANSI/ASME B 18.6.1. The corrosion resistance shall meet ASTM A 641, Class 1 or an equal corrosion resistance by coating, electro galvanization, mechanical galvanization, stainless steel, nonferrous metal or other suitable corrosion resistant material.

R905.8.7.2 Wood battens. 1 x 6 wood battens shall be attached to the wood joists with 2 screws per joist. The first batten was located 6 inches from the outer edge of the wood joist. Second batten shall be spaced 1-¼ inches from the first batten. The remaining battens shall be spaced a maximum 2 inches apart, except the last one which shall be spaced no greater than ¾ inches from the previous batten.

R905.8.7.3 Shakes. Shakes shall be attached to the battens with 2 nails for each shake placed 1½ inch above the exposure line. The nails shall be ¾ to 1 inch from the shake edges.

(Renumber subsequent sections)

CHAPTER 43
REFERENCED STANDARDS

ASME B 18.6.1 Wood Screws (inch series)

Reason: The Cedar Shake and Shingle Bureau provided UL test report dated August 24, 2004 for the installation of wood shingles. Based on this test report the allowable uplift resistance using a safety factor of 2 is 90 psf. The information above describes the installation used to obtain this allowable uplift resistance.

Cost Impact: The code change proposal will not increase the cost of construction. The prescriptive criteria in this proposal is necessary to develop an allowable uplift resistance of 90 psf.

Analysis: Results of review of the proposed standard will be posted on the ICC website by August 20, 2006.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB300–06/07
R905.8.8, R905.8.8.1 (New)

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

1. Revise as follows:

R905.8.8 ~~Valley~~ Flashing. ~~Roof valley flashing shall not be less than No. 26 gage [0.019 inches (0.5 mm)] corrosion-resistant sheet metal and shall extend at least 11 inches (279 mm) from the centerline each way. Sections of flashing shall have an end lap of not less than 4 inches (102 mm).~~ At the juncture of the roof and vertical surfaces, flashing and counter flashing shall be provided in accordance with the manufacturer's installation instructions, and where of metal, shall be in accordance with Table R903.2.2.

2. Add new text as follows:

R905.8.8.1 Valley flashing. Valley flashing shall extend at least 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) underlayment of one layer of ASTM D 226 Type I underlayment running the full length of the valley, in addition to other required underlayment. Valley flashing and flashing metal shall be a minimum thickness as provided in Table R903.2.2 for nonferrous metal or stainless steel.

Reason: This proposal is to coordinate the requirements of the *International Building Code* with the *International Residential Code* so that both codes have identical criteria for flashing of wood shakes. Section R905.8.8 is the first sentence from IBC Section 1507.9.8 and Section R905.8.8.1 is the remainder of IBC Section 1507.9.8.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB301–06/07
R905.9.3

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.9.3 Application. Built-up roofs shall be installed according to this chapter and the manufacturer's installation instructions. The installations instruction shall state the allowable uplift resistance for the attachment system. The installation of built-up roof shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2).

Reason: The proposal will require that the manufacturer's installation instructions provide sufficient information for the permit applicant and the Building Official can verify the allowable uplift resistance with the uplift resistance in Table R301.2(2).

Cost Impact: The code change proposal will not increase the cost of construction. Built-up roofs are required to have an attachment system capable of resisting the wind forces defined in the Code. This proposal provides the cross-reference for the manufacturer to the Code table for the minimum wind forces. The manufacturer can use this table or analysis the wind forces per ASCE 7.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB302–06/07
Table R905.10.3(1)

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise table as follows:

TABLE R905.10.3(1)
METAL ROOF COVERINGS STANDARDS

ROOF COVERING TYPE	STANDARD	~~STANDARD~~ APPLICATION RATE/THICKNESS
Galvanized Steel	ASTM A 653 G90 Zinc Coated	~~ASTM A 653 G90 Zinc Coated~~ minimum .013 inch thickness
Stainless Steel	ASTM A 240 300 Series Alloy	~~ASTM A 240 300 Series Alloy~~
Steel	ASTM A 924	~~ASTM A 924~~
Lead-coated copper	ASTM B 101	~~ASTM B 101~~
Cold Rolled Copper	ASTM B 370	~~ASTM B 370,~~ minimum 16 oz/square ft high yield copper for metal sheet roof covering systems 12 oz./square ft for preformed metal shingle systems
Hard lead		2 lbs./sq. ft.
Soft lead		3 lbs./sq. ft.
Aluminum	ASTM B 209	~~ASTM B 209,~~ 0.024 inch minimum thickness for roll formed panels ~~and~~ 0.019 inch minimum thickness for press formed shingles.
Terne (tin) and Terne-coated Stainless		Terne coating of 40 lbs. per double base box, field painted where applicable in accordance with manufacturer's installation instructions.
Zinc	99.995% electrolytic high grade zinc with alloy additives of copper (0.08% – 0.20%), titanium (0.07% - 0.12%) and aluminum (0/015%)	0.027 inch minimum thickness~~: 99.995% electrolytic high grade zinc with alloy additives of copper (0.08% – 0.20%), titanium (0.07% – 0.12%) and aluminum (0/015%)~~
Aluminum-zinc Coated Steel	ASTM A 792	~~ASTM A 792~~ AZ 50 (coated)
Prepainted steel	ASTM A 755	

For SI: 1 ounce per square foot = 0.305 kg/m2, 1 pound per square foot = 4.214 kg/m2, 1 inch = 25.4 mm, 1 pound = 0.454 kg.

Reason: Divide the table into three columns to clarify the material standard and the thickness/application rate. Provide a minimum thickness for galvanized steel. Add aluminum-zinc coated steel and prepainted steel to materials that are acceptable as a roof covering.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB303–06/07
R905.10.4

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.10.4 Attachment. Metal roof panels shall be ~~secured to the supports~~ installed in accordance with this chapter and the manufacturer's installation instructions. The installations instruction shall state the allowable uplift resistance

for the attachment system. The installation of metal roof panels shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2). In the absence of manufacturer's installation instructions, the following fasteners shall be used:

1. Galvanized fasteners shall be used with steel roofs.
2. Three hundred series stainless steel fasteners shall be used with copper roofs.
3. Stainless steel fasteners are acceptable for metal roofs.

Reason: The proposal will require that the manufacturer's installation instructions provide sufficient information for the permit applicant and the Building Official can verify the allowable uplift resistance with the uplift resistance in Table R301.2(2).

Cost Impact: The code change proposal will not increase the cost of construction. Metal roof panels are required to have an attachment system capable of resisting the wind forces defined in the code. This proposal provides the cross-reference for the manufacturer to the code table for the minimum wind forces. The manufacturer can use this table or analyze the wind forces per ASCE 7.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB304–06/07
R905.10.5 (New)

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Add new text as follows:

R905.10.5 Underlayment. Underlayment shall be installed as per manufacturer's installation instructions.

Reason: Provide code criterion for the installation of underlayment.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB305–06/07
R905.11.3

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.11.3 Application. Modified bitumen roof shall be installed according to this chapter and the manufacturer's installation instructions. The installations instruction shall state the allowable uplift resistance for the attachment system. The installation of a modified bitumen roof shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2).

Reason: The proposal will require that the manufacturer's installation instructions provide sufficient information for the permit applicant and the Building Official can verify the allowable uplift resistance with the uplift resistance in Table R301.2(2).

Cost Impact: The code change proposal will not increase the cost of construction. A modified bitumen roof is required to have an attachment system capable of resisting the wind forces defined in the code. This proposal provides the cross-reference for the manufacturer to the code table for the minimum wind forces. The manufacturer can use this table or analyze the wind forces per ASCE 7.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB306–06/07
R905.12.3

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.12.3 Application. Thermoset single-ply roof shall be installed according to this chapter and the manufacturer's installation instructions. The installation instructions shall state the allowable uplift resistance for the attachment system. The installation of a thermoset single-ply roof shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2).

Reason: The proposal will require that the manufacturer's installation instructions provide sufficient information for the permit applicant and the Building Official can verify the allowable uplift resistance with the uplift resistance in Table R301.2(2).

Cost Impact: The code change proposal will not increase the cost of construction. A thermoset single-ply roof is required to have an attachment system capable of resisting the wind forces defined in the Code. This proposal provides the cross-reference for the manufacturer to the Code table for the minimum wind forces. The manufacturer can use this table or analyze the wind forces per ASCE 7.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB307–06/07
R905.13.3

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.13.3 Application. Thermoplastic single-ply roof shall be installed according to this chapter and the manufacturer's installation instructions. The installation instructions shall state the allowable uplift resistance for the attachment system. The installation of a thermoplastic single-ply roof shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2).

Reason: The proposal will require that the manufacturer's installation instructions provide sufficient information for the permit applicant and the Building Official can verify the allowable uplift resistance with the uplift resistance in Table R301.2(2).

Cost Impact: The code change proposal will not increase the cost of construction. A thermoplastic single-ply roof is required to have an attachment system capable of resisting the wind forces defined in the code. This proposal provides the cross-reference for the manufacturer to the code table for the minimum wind forces. The manufacturer can use this table or analyze the wind forces per ASCE 7.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB308–06/07
R905.14.3

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.14.3 Application.
Foamed-in-place roof insulation shall be installed in accordance with this chapter and the manufacturer's installation instructions. A liquid-applied protective coating that complies with Section R905.15 shall be applied no less than 2 hours nor more than 72 hours following the application of the foam. The installation instructions shall state the allowable uplift resistance for the attachment system. The installation of foamed-in-place roof insulation shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2).

Reason: The proposal will require that the manufacturer's installation instructions provide sufficient information for the permit applicant and the Building Official can verify the allowable uplift resistance with the uplift resistance in Table R301.2(2).

Cost Impact: The code change proposal will not increase the cost of construction. Foamed in place roof insulation is required to have an attachment system capable of resisting the wind forces defined in the code. This proposal provides the cross-reference for the manufacturer to the code table for the minimum wind forces. The manufacturer can use this table or analyze the wind forces per ASCE 7.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB309–06/07
R905.15.3

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Revise as follows:

R905.15.3 Application. Liquid-applied roof coatings shall be installed according to this chapter and the manufacturer's installation instructions. The installation instructions shall state the allowable uplift resistance for the attachment system. The installation of liquid-applied roof coatings shall be limited to roofs where the allowable uplift resistance is equal to or greater than the design uplift pressure for the roof listed in Table R301.2(2).

Reason: The proposal will require that the manufacturer's installation instructions provide sufficient information for the permit applicant and the Building Official can verify the allowable uplift resistance with the uplift resistance in Table R301.2(2).

Cost Impact: The code change proposal will not increase the cost of construction. Liquid-applied roof coatings are required to have an attachment system capable of resisting the wind forces defined in the code. This proposal provides the cross-reference for the manufacturer to the code table for the minimum wind forces. The manufacturer can use this table or analyze the wind forces per ASCE 7.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB310–06/07

R906.3 (New), R906.4 (New), R906.5 (New), R906.6 (New), R906.6.1 (New), R906.6.2 (New), R906.7 (New)

Proponent: Bob Boyer, CBO, representing Building Officials Association of Florida Code Development Committee

Add new text as follows:

R906.3 Moisture levels. Roof insulation shall be kept dry. When elevated moisture levels are found in the insulation or where panels cannot achieve adhesion, the panels shall not be used.

R906.4 Installation using hot asphalt. Insulation panel's dimension shall not exceed 4 feet (1219 mm) when installed using asphalt. The insulation panels shall be installed using a bed of asphalt. When installed in multi-layer the joints between adjacent layers shall be staggered.

R906.5 Installation using cold adhesive. Application in approved cold adhesive shall be in accordance with the approved manufacturer's installation instructions.

R906.6 Nail boards or composite panels with a nailable face. Nail boards or composite panels with a nailable surface applied to sloped decks for the application of prepared roof covering or metal roofing systems to provide a nailing surface shall be a minimum $^{15}/_{32}$-inch (12 mm) exterior grade wood structural sheathing. The nail boards or composite panels shall be attached to the deck with approved fastening assemblies in accordance with the wind load requirements of Table R301.2(2). Composite panels shall be gapped a minimum of ⅛ inch (3.2 mm).

R906.6.1 Installation on buildings with a mean roof height of 35 feet (10.7 m) or less. Nailable decks shall be fastened to every structural roof frame member or to the existing deck under the insulation at intervals of not more than 24 inches (610 mm) apart, with a minimum #12 approved insulation fastener spaced at a maximum of 12 inches (305 mm) apart in one direction with a minimum penetration of 1½ inches (38 mm) into the structural member or deck. The maximum thickness of the rigid insulation board shall not exceed 2 inches (51 mm).

R906.6.2 Installation on buildings with a mean roof height greater than 35 feet (10.7 m). Roof insulation shall be installed in accordance with this chapter and the manufacturer's installation instructions. The approved allowable uplift resistance for the sprayed polyurethane foam roofing shall be equal to or greater than the uplift resistance for the roof based on Table R301.2(2).

R906.7 Installation in uneven areas. Mechanical attachment of insulation panels at uneven areas shall be acceptable. Insulation panels shall not be hollowed, cut or scored to provide contact with the sheathing.

Reason: The information in the *International Residential Code* on foam plastic is the fire characteristic and the thermal protection requirements. This modification is to provide prescriptive criteria for the installation of foam plastic in a roof covering assembly.

Cost Impact: The code change proposal will not increase the cost of construction. These sections provide prescriptive criteria for the installation of foam plastic roof insulation. The user has the option to either use these prescriptive criteria or develop other criteria that can withstand the design wind forces.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB311-06/07
Chapter 43

Proponent: Standards Writing Organization

Revise standards as follows:

ASTM

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

Standard reference number	Title
A 153/A 153M-05 ~~03~~	Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware
A 167-99(2004)	Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip
A 240/A 240M-05a ~~04~~	Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and for General Application
A 463M/A 463M-05 ~~02a~~	Standard Specification for Steel Sheet, Aluminum-Coated, by the Hot Dip Process
A 653/A 653M 05a ~~04a~~	Specification for Steel Sheet, Zinc-Coated Galvanized or Zinc-Iron Alloy-Coated Galvanized by the Hot Dip Process
A 706/A 706M-05a ~~04a~~	Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
A 755/A 755M-03 ~~01(2003)~~	Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products
A 875/A 875M-05 ~~02a~~	Standard Specification for Steel Sheet Zinc-5%, Aluminum Alloy-Coated by the Hot-Dip Process
A 924/A 924M-04	Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot Dip Process
A 996/A 996M-05a ~~04~~	Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement
A 1003/A 1003M-05 ~~00~~	Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-formed Framing Members
B 695-04 ~~00~~	Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
C 28/C 28M-00~~e01~~(2005)	Specification for Gypsum Plasters
C 35-~~95~~01(200~~1~~5)	Specification for Inorganic Aggregates for Use in Gypsum Plaster
C 62-05 ~~04~~	Specification for Building Brick (Solid Masonry Units Made from Clay or Shale)
C 67-05~~ae01~~	Test Methods of Sampling and Testing Brick and Structural Clay Tile
C 73-05 ~~99a~~	Specification for Calcium Silicate Face Brick (Sand-Lime Brick)
C 90-06 ~~03a~~	Specification for Loadbearing Concrete Masonry Units
C 129-05 ~~03~~	Specification for Nonload-bearing Concrete Masonry Units
C 140-05a ~~03c~~	Test Method Sampling and Testing Concrete Masonry Units and Related Units
C 143/C 143M-05a ~~03~~	Test Method for Slump of Hydraulic Cement Concrete
C 199-84 (200~~0~~5)	Test Method for Pier Test for Refractory Mortars
C 207-06 ~~04~~	Specification for Hydrated Lime for Masonry Purposes
C 216-05a ~~04a~~	Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale)
C 270-05a ~~04~~	Specification for Mortar for Unit Masonry
C 296-(2004)e01 ~~00~~	Specification for Asbestos-Cement Pressure Pipe
C 406-05 ~~00~~	Specification for Roofing Slate
C 514-04 ~~01~~	Specification for Nails for the Application of Gypsum Board
C 578-05a ~~04~~	Specification for Rigid, Cellular Polystyrene Thermal Insulation
C 587-04 ~~02~~	Specification for Gypsum Veneer Plaster
C 631-95a(200~~0~~ 4)	Specification for Bonding Compounds for Interior Gypsum Plastering
C 645-04a	Specification for Nonstructural Steel Framing Members

C 652-05a ~~04a~~	Specification for Hollow Brick (Hollow Masonry Units made from Clay or Shale)
C 728-05 ~~97[e1]~~	Standard Specification for Perlite Thermal Insulation Board
C 836-05 ~~03~~	Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course
C 844-04 ~~99~~	Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster
C 847-04 ~~(2000)~~	Specification for Metal Lath
C 887-05 ~~79(2001)~~	Specification for Packaged, Dry, Combined Materials for Surface Bonding Mortar
C 897-05 ~~00~~	Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters
C 926-98a(2005)	Specification for Application of Portland Cement-Based Plaster
C 933-05 ~~04~~	Specification for Welded Wire Lath
C 954-04 ~~00~~	Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 inch (0.84 mm) to 0.112 inch (2.84 mm) in Thickness
C 957-05a ~~04~~	Specification for High-Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane with Integral Wearing Surface
C 1002-04 ~~01~~	Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
C 1029-05a ~~02~~	Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation
C 1047-05 ~~99~~	Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base
C 1177/C 1177M-04e01	Specification for Glass Mat Gypsum Substrate for Use as Sheathing
C 1178/C 1178M-04e01	Specification for Glass Mat Water-Resistant Gypsum Backing Panel
C 1261-05 ~~04~~	Specification for Firebox Brick for Residential Fireplaces
C 1278/C 1278M-03e01	Specification for Fiber-Reinforced Gypsum Panels
C 1288-99(2004) ~~01~~	Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets
C 1289—05a ~~03~~	Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
C 1396/C 1396-04	Specification for Gypsum Ceiling Board
C 1440-03 ~~99e01~~	Specification for Thermoplastic Elastomeric (TPE) Gasket Materials for Drain, Waste, and Vent (DWV), Sewer, Sanitary and Storm Plumbing Systems
D 41-05 ~~e01~~	Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
D 225-05 ~~04~~	Specification for Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules
D 226-05 ~~97a~~	Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
D 1227-95(2000) ~~00~~	Specification for Emulsified Asphalt Used as a Protective Coating for Roofing
D 1863-05 ~~03~~	Specification for Mineral Aggregate Used on Built-Up Roofs
D 2178-04 ~~97a~~	Specification for Asphalt Glass Felt Used in Roofing and Waterproofing
D 2282-99(2005)~~e01~~	Specification for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe (SDR-PR)
D 2823-05 ~~90(1997)[e1]~~	Specification for Asphalt Roof Coatings
D 2898-94 (2004) ~~1999~~	Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing
D 3019-94(2000)e01	Specification for Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, Asbestos Fibered, and Non-Asbestos Fibered
D 3161-05 ~~03b~~	Test Method for a Wind Resistance of Asphalt Shingles (Fan Induced Method)
D 3679-05 ~~04~~	Specification for Rigid Poly (Vinyl Chloride) (PVC) Siding
D 3737-05 ~~03~~	Practice for Establishing Allowable Properties for Structural Glued Laminated Timber (Glulam)
D 3909-97b(2004)e01	Specification for Asphalt Roll Roofing (Glass Felt) Surfaced with Mineral Granules
D 4601-04 ~~98~~	Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing
D 4869-05 ~~04~~	Specification for Asphalt-Saturated (Organic Felt) Underlayment Used in Steep Slope Roofing
D 4990-97a(2005)e01	Specification for Coal Tar Glass Felt Used in Roofing and Waterproofing
D 5019-05 ~~96e01~~	Specification for Reinforced Non-Vulcanized Polymeric Sheet Used in Roofing Membrane
D 5055-05 ~~04~~	Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists
D 5643-94(2005) ~~e01~~	Specification for Coal Tar Roof Cement, Asbestos-Free

D 5726-98(2005)	Specification for Thermoplastic Fabrics Used in Hot-Applied Roofing and Waterproofing
D 6083-05e01 ~~97a~~	Specification for Liquid Applied Acrylic Coating Used in Roofing
D 6164-05 ~~00~~	Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements
D 6222-02e01	Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements
D 6223-02e01	Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements
D 6298-05 ~~00~~	Specification for Fiberglass Reinforced Styrene-Butadiene-Styrene (SBS) Modified Bituminous Sheets with a Factory Applied Metal Surface
D 6380-03 ~~01~~	Standard Specification for Asphalt Roll Roofing (Organic) Felt
D 6757-05 ~~02~~	Standard Specification for Inorganic Underlayment for Use with Steep Slope Roofing Products
E 84-05e01 ~~04~~	Test Method for Surface Burning Characteristics of Building Materials
E 96/E 96M-05 ~~00e01~~	Test Method for Water Vapor Transmission of Materials
E 108-05 ~~04~~	Test Methods for Fire Tests of Roof Coverings
E 119-05a ~~00~~	Test Methods for Fire Tests of Building Construction and Materials
E 136-04 ~~99e01~~	Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C
E 1886-05 ~~04~~	Test Method for Performance of Exterior windows, Curtain Walls, Doors and Storm Shutters Impacted by Missiles and Exposed to Cyclic Pressure Differentials
E 1996-05b ~~04~~	Specification for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Winborne Debris in Hurricanes
F 1667-05 ~~03~~	Specification for Driven Fasteners: Nails, Spikes, and Staples
F 2006-(2005) ~~00~~	Standard/Safety Specification for Window Fall Prevention Devices for Non-Emergency Escape (Egress) and Rescue (Ingress) Windows

AWPA

American Wood Preservers' Association
P.O. Box 361784
Birmingham, AL 35236-1784

Standard reference number	Title
C1-03 ~~00~~	All Timber Products- Preservative Treatment by Pressure Processes
M4-06 ~~06~~	Standard for the Care of Preservative-Treated Wood Products
U1-06 ~~04~~	USE CATEGORY SYSTEM: User Specification for Treated Wood except Section 6, Commodity Specification H

HPVA

Hardwood Plywood Veneer Association
1825 Michael Faraday Drive
Reston, VA 20190-5350

Standard reference number	Title
HP-1-2004 ~~2000~~	Standard for Hardwood and Decorative Plywoods

NFPA

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02269-9101

Standard reference number	Title
211-06 ~~03~~	Chimneys, Fireplaces, Vents and Solid Fuel-Burning Appliances
259-03 ~~04~~	Test Method for Potential Heat of Building Materials
286-06 ~~00~~	Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth
501-05 ~~03~~	Manufactured Housing

Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062

UL

Standard reference number	Title
80-2004 ~~1996~~	Steel Tanks for Oil-Burner Fuel ~~- with revisions through June 2003~~
103-2001	Factory-Built Chimneys, for Residential Type and Building Heating Appliances with Revisions through December ~~2003~~ 2005
174-04	Household Electric Storage Tank Water Heaters - with Revisions through ~~October 1999~~ November 2005
181-2005 ~~1996~~	Factory-Made Air Ducts and Air Connectors ~~- with Revisions through May 2003~~
181A-2005 ~~1998~~	Closure Systems for Use with Rigid Air Ducts and Air Connectors ~~- with Revisions through December 1998~~
181B-2005 ~~1995~~	Closure Systems for Use with Flexible Air Ducts and Air Connectors ~~- with Revisions through August 2003~~
217-97	Single and Multiple Station Smoke Alarms-with Revisions through ~~January 2004~~ August 2005
325-2002	Door, Drapery, Louver and Window Operators and Systems - with Revisions through ~~March 2003~~ February 2006
641-1995	Type L Low-Temperature Venting Systems - with Revisions through ~~April 1999~~ August 2005
726-~~1998~~ 1995	Oil-Fired Boiler Assemblies - with Revisions through ~~January 2001~~February 2006
732-1995	Oil-Fired Storage Tank Water Heaters - with Revisions through ~~January 1999~~ February 2005
790-04	Tests for Fire Resistance of Roof Covering Materials ~~- with Revisions through July 1998~~
834-04	Heating, Water Supply, and Power Boilers - Electric ~~- with Revisions through November 1998~~
923-2002	Microwave Cooking Appliances - with Revisions through ~~January 2003~~ February 2006

Reason: The *ICC Code Development Process for the International Codes* (Procedures) Section 4.5* requires the updating of referenced standards to be accomplished administratively, and be processed as a Code Proposal. In May 2005, a letter was sent to each developer of standards that are referenced in the I-Codes, asking them to provide ICC with a list of their standards in order to update to the current edition. Above is the list received of the referenced standards under the maintenance responsibility of the IRC Committee.

***4.5 Updating Standards:** The updating of standards referenced by the Codes shall be accomplished administratively by the appropriate code development committee in accordance with these full procedures except that multiple standards to be updated may be included in a single proposal.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB312–06/07
Appendix F103.4.9

Proponent: Tony Longino, County of Greenville, SC, representing himself

Revise as follows:

AF103.4.9 Crawl space floors. Openings around all penetrations through floors above crawl spaces shall be caulked or otherwise filled to prevent air leakage. Openings in floors above crawl spaces shall not be used to supply combustion air for any appliance installed in a living space

Reason: Allowing an opening from the crawl space into the living space conflicts with Section AF 103.4. This section requires all floor openings to be sealed around all pipes, wires, and penetrations to prevent entry routes. It would make no sense to have a permanent opening that will allow the free flow of radon gas from the crawl space into the living space.

Cost Impact: There would be no cost impact, for most installations. If duct work were required to be installed it would have an impact, but could not be determined without knowing the size, and length of the duct.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB313–06/07
Appendix G103.3 (New), Appendix G108.1 (New)

Proponent: Rebecca C. Quinn, RCQuinn Consulting, Inc., representing the US Department of Homeland Security, Federal Emergency Management Agency

Add new text and standard as follows:

AG103.3 Pools in flood hazard areas. In flood hazard areas established by Table R301.2(1), pools in floodways and pools in coastal high hazard areas shall be designed and constructed in conformance with ASCE 24 as listed in Section AG 108.1.

AG108.1 General

ASCE 24-05 Flood Resistant Design and Construction

Reason: The purpose of this code change proposal is to address installation of swimming pools in or on the lot of a one- or two-family dwelling if the location of the proposed swimming pool is in a flood hazard area.

If located in flood hazard areas, in-ground and above-ground pools should be designed to withstand flood related loads and load combinations. The regulations of the National Flood Insurance Program require that all development be designed and adequately anchored to prevent flotation, collapse, or lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy (44 C.F.R. §60.3(a)(3)(i)). Floodways are portions of riverine floodplains where encroachments, such as above-ground pools or fill that may be placed around pools, may block the flow of floodwater and increase flood levels. Coastal high hazard areas (also called V Zones) are portions of some coastal floodplains where high velocity wave action occur and wave heights are anticipated to be greater than 3-feet high. Coastal high hazard areas also may be subject to erosion and local scour that can affect foundation stability during conditions of the base flood; if pools are structurally connected to buildings, the pools should be designed to function as a continuation of the building (see R324.3.3).

The technical information used to substantiate this proposal is the NFIP regulation §60.3(a)(3)(i) [(federal regulations are available online].

Cost Impact: The code change proposal will not increase the cost of construction (more than 20,000 local jurisdictions already participate in the NFIP).

Analysis: Results of review of the proposed standard will be posted on the ICC website by August 20, 2006.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB314–06/07
Appendix G105.2; IBC 3109.4.1.7

Proponent: Gene Boecker, Code Consultants, Inc.

THIS PROPOSAL IS ON THE AGENDA OF THE IRC BUILDING/ENERGY AND THE IBC GENERAL CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IRC

Revise as follows:

AG105.2 Outdoor swimming pool. An outdoor swimming pool, including an in-ground, above-ground or on-ground pool, hot tub or spa shall be surrounded by a barrier which shall comply with the following:

1. The top of the barrier shall be at least 48 inches (1219 mm) above grade measured on the side of the barrier which faces away from the swimming pool. The maximum vertical clearance between grade and the bottom of the barrier shall be 2 inches (51 mm) measured on the side of the barrier which faces away from the swimming pool. Where the top of the pool structure is above grade, such as an above-ground pool, the barrier may be at ground level, such as the pool structure, or mounted on top of the pool structure. Where the barrier is mounted on top of the pool structure, the maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be 4 inches (102 mm).
2. Openings in the barrier shall not allow passage of a 4-inch-diameter (102 mm) sphere.
3. Solid barriers which do not have openings, such as a masonry or stone wall, shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.
4. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than 45 inches (1143 mm), the horizontal members shall be located on the swimming pool side of the fence. Spacing between vertical members shall not exceed 13/4 inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 13/4 inches (44 mm) in width.

5. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is 45 inches (1143 mm) or more, spacing between vertical members shall not exceed 4 inches (102 mm). Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 13/4 inches (44 mm) in width.
6. Maximum mesh size for chain link fences shall be a 21/4-inch (57 mm) square unless the fence has slats fastened at the top or the bottom which reduce the openings to not more than 13/4 inches (44 mm).
7. Where the barrier is composed of diagonal members, such as a lattice fence, the maximum opening formed by the diagonal members shall not be more than 13/4 inches (44 mm).
8. Access doors or gates shall comply with the requirements of Section AG105.2, Items 1 through 7, and shall be equipped to accommodate a locking device. Pedestrian access doors or gates shall open outward away from the pool and shall be self-closing and have a self-latching device. Doors or gates other than pedestrian access doors or gates shall have a self-latching device. Where the release mechanism of the self-latching device is located less than 54 inches (1372 mm) from the bottom of the door or gate, the release mechanism and openings shall comply with the following:
   8.1. The release mechanism shall be located on the pool side of the door or gate at least 3 inches (76 mm) below the top of the door or gate; and
   8.2. The door or gate and barrier shall have no opening larger than 1/2 inch (13 mm) within 18 inches (457 mm) of the release mechanism.
9. Where a wall of a dwelling serves as part of the barrier, one of the following conditions shall be met:
   9.1. The pool shall be equipped with a powered safety cover in compliance with ASTM F 1346; or
   9.2. Doors with direct access to the pool through that wall shall be equipped with an alarm which produces an audible warning when the door and/or its screen, if present, are opened. The alarm shall be listed in accordance with UL 2017. The audible alarm shall activate within 7 seconds and sound continuously for a minimum of 30 seconds after the door and/or its screen, if present, are opened and be capable of being heard throughout the house during normal household activities. The alarm shall automatically reset under all conditions. The alarm system shall be equipped with a manual means, such as touch pad or switch, to temporarily deactivate the alarm for a single opening. Deactivation shall last for not more than 15 seconds. The deactivation switch(es) shall be located at least 54 inches (1372 mm) above the threshold of the door; or
   9.3. Other means of protection, such as self-closing doors with self-latching devices, which are approved by the governing body, shall be acceptable so long as the degree of protection afforded is not less than the protection afforded by Item 9.1 or 9.2 described above.
10. Where an above-ground pool structure is used as a barrier or where the barrier is mounted on top of the pool structure, and the means of access is a ladder or steps:
    10.1. The ladder or steps shall be capable of being secured, locked or removed to prevent access; or 10.2. The ladder or steps shall be surrounded by a barrier which meets the requirements of Section AG105.2, Items 1 through 9. When the ladder or steps are secured, locked or removed, any opening created shall not allow the passage of a 4-inch-diameter (102 mm) sphere.

PART II – IBC

Revise as follows:

3109.4.1.7 Gates. Access doors or gates shall comply with the requirements of Sections 3109.4.1.1 through 3109.4.1.6 and shall be equipped to accommodate a locking device. Pedestrian access doors or gates shall open outward away from the pool and shall be self-closing and have a self-latching device. Doors or g~~G~~ates other than pedestrian access door or gates shall have a self-latching device. Release mechanisms shall be in accordance with Sections 1008.1.8 and 1109.13. Where the release mechanism of the self-latching device is located less than 54 inches (1372 mm) from the bottom of the door or gate, the release mechanism shall be located on the pool side of the door or gate at least 3 inches (76 mm) below the top of the door or gate, and the door or gate and barrier shall have no opening greater than 0.5 inch (12.7 mm)within 18 inches (457 mm) of the release mechanism.

Reason: Coordination among requirements for doors and gates that provide protection of swimming pools.
Commonly, in the case where a pool is accessed from an interior space, a door is used instead of a gate. This change adds a cross correlation that acknowledges that the pool access can be other than a gate but that the hardware must still be at 54 inches.
Pools are required to be protected by enclosures. Clarifying the need to install hardware at the proper height for its function is necessary in the code.

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

PART I – IRC

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART II – IBC

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

RB315–06/07
Appendix G105.2; IBC 3109.4.1.8

Proponent: Bob Eugene, Underwriters Laboratories, Inc.

THIS PROPOSAL IS ON THE AGENDA OF THE IRC BUILDING/ENERGY AND THE IBC GENERAL CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IRC

Revise as follows:

AG105.2 Outdoor swimming pool. An outdoor swimming pool, including an in-ground, above-ground or on-ground pool, hot tub or spa shall be surrounded by a barrier which shall comply with the following:

1. The top of the barrier shall be at least 48 inches (1219 mm) above grade measured on the side of the barrier which faces away from the swimming pool. The maximum vertical clearance between grade and the bottom of the barrier shall be 2 inches (51 mm) measured on the side of the barrier which faces away from the swimming pool. Where the top of the pool structure is above grade, such as an above-ground pool, the barrier may be at ground level, such as the pool structure, or mounted on top of the pool structure. Where the barrier is mounted on top of the pool structure, the maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be 4 inches (102 mm).
2. Openings in the barrier shall not allow passage of a 4-inch-diameter (102 mm) sphere.
3. Solid barriers which do not have openings, such as a masonry or stone wall, shall not contain indentations or protrusions except for normal construction tolerances and tooled masonry joints.
4. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is less than 45 inches (1143 mm), the horizontal members shall be located on the swimming pool side of the fence. Spacing between vertical members shall not exceed 13/4 inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 13/4 inches (44 mm) in width.
5. Where the barrier is composed of horizontal and vertical members and the distance between the tops of the horizontal members is 45 inches (1143 mm) or more, spacing between vertical members shall not exceed 4 inches (102 mm). Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 13/4 inches (44 mm) in width.
6. Maximum mesh size for chain link fences shall be a 21/4-inch (57 mm) square unless the fence has slats Fastened at the top or the bottom which reduce the openings to not more than 13/4 inches (44 mm).
7. Where the barrier is composed of diagonal members, such as a lattice fence, the maximum opening formed by the diagonal members shall not be more than 13/4 inches (44 mm).
8. Access gates shall comply with the requirements of Section AG105.2, Items 1 through 7, and shall be equipped to accommodate a locking device. Pedestrian access gates shall open outward away from the pool and shall be self-closing and have a self-latching device. Gates other than pedestrian access gates shall have a self latching device. Where the release mechanism of the self-latching device is located less than 54 inches (1372 mm) from the bottom of the gate, the release mechanism and openings shall comply with the following:
   8.1. The release mechanism shall be located on the pool side of the gate at least 3 inches (76 mm) below the top of the gate; and
   8.2. The gate and barrier shall have no opening larger than 1/2 inch (13 mm) within 18 inches (457 mm) of the release mechanism.
9. Where a wall of a dwelling serves as part of the barrier, one of the following conditions shall be met:
   9.1. The pool shall be equipped with a powered safety cover in compliance with ASTM F 1346; or
   9.2. Doors with direct access to the pool through that wall shall be equipped with an alarm which produces an audible warning when the door and/or its screen, if present, are opened. The alarm shall be listed and labeled in accordance with UL 2017. ~~The audible alarm shall activate within 7 seconds and sound continuously for a minimum of 30 seconds after the door and/or its screen, if present, are opened and be capable of being heard throughout the house during normal household activities. The alarm shall automatically reset under all conditions. The alarm system shall be equipped with a manual means, such as touch pad or switch, to temporarily deactivate the alarm for a single opening. Deactivation shall last for not more than 15 seconds.~~ The deactivation switch(es) shall be located at least 54 inches (1372 mm) above the threshold of the door.~~;~~ ~~or~~
   ~~9.3. Other means of protection, such as self-closing doors with self-latching devices, which are approved by the governing body, shall be acceptable so long as the degree of protection afforded is not less than the protection afforded by Item 9.1 or 9.2 described above.~~
10. Where an above-ground pool structure is used as a barrier or where the barrier is mounted on top of the pool structure, and the means of access is a ladder or steps:

10.1. The ladder or steps shall be capable of being secured, locked or removed to prevent access; or 10.2. The ladder or steps shall be surrounded by a barrier which meets the requirements of Section AG105.2, Items 1 through 9. When the ladder or steps are secured, locked or removed, any opening created shall not allow the passage of a 4-inch-diameter (102 mm) sphere.

PART II – IBC

Revise as follows:

3109.4.1.8 Dwelling wall as a barrier. Where a wall of a dwelling serves as part of the barrier, one of the following shall apply:

1. Doors with direct access to the pool through that wall shall be equipped with an alarm that produces an audible warning when the door and/or its screen, if present, are opened. The alarm shall be listed and labeled in accordance with UL 2017~~. The audible alarm shall activate within 7 seconds and sound continuously for a minimum of 30 seconds after the door and/or its screen, if present, are opened and be capable of being heard throughout the house during normal household activities. The alarm shall automatically reset under all conditions. The alarm shall be equipped with a annual means, such as touchpad or switch, to temporarily deactivate the alarm for a single opening. Such deactivation shall last for not more than 15 seconds.~~ In dwellings not required to be Accessible, Type A or Type B units, the deactivation switch shall be located 54 inches (1372 mm) or more above the threshold of the door. In dwellings required to be Accessible, Type A or Type B units, the deactivation switch(es) shall be located at 54 inches (1372 mm) maximum and 48 inches minimum above the threshold of the door.
2. The pool shall be equipped with a power safety cover that complies with ASTM F 1346.
3. ~~Other means of protection, such as self-closing doors with self-latching devices, which are approved by the administrative authority, shall be accepted so long as the degree of protection afforded is not less than the protection afforded by Section 3109.4.1.8, Item 1 or 2.~~

Reason: To delete unnecessary text.

UL 2017 is the ANSI standard that addresses “pool alarms”, also known as residential water-hazard entrance alarm equipment. UL 2017 establishes a definitive performance test and audible level criteria for the alarm. The third option is already available through alternate materials and methods in Section 104.11.

UL 2017 covers Residential Water Hazard entrance alarms. Residential Water Hazard entrance alarms are devices or systems intended to be installed on gates, doors, or access barriers surrounding residential swimming pools, spas, or hot tubs for the purpose of sounding an audible alarm due to unauthorized entry into these areas. UL 2017 includes the requirement identified in the code as well as an operation test, an audibility test and a static discharge test. There are several pool alarms that are currently listed and available in the marketplace. The third option is already available through alternate materials and methods in Section 104.11.

Bibliography: UL 2017

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

PART I – IRC

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART II – IBC

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

RB316–06/07
Appendix G106

Proponent: Gary S. Duren, President Code Compliance, Inc.

Delete Section AG106 and relocate as follows:

SECTION ~~AG106~~ R325
ENTRAPMENT PROTECTION FOR SWIMMING POOL AND SPA SUCTION OUTLETS

~~AG106.1~~ R325.1 General. Suction outlets shall be designed to produce circulation throughout the pool or spa. Single-outlet systems, such as automatic vacuum cleaner systems, or multiple suction outlets, whether isolated by valves or otherwise, shall be protected against user entrapment.

~~AG106.2~~ **R325.2 Suction fittings.** Pool and spa suction outlets shall have a cover that conforms to ANSI/ASME A112.19.8M, or an 18 inch×23 inch (457mmby 584 mm) drain grate or larger, or an approved channel drain system.

Exception: Surface skimmers

~~AG106.3~~ **R325.3 Atmospheric vacuum relief system required.** Pool and spa single- or multiple-outlet circulation systems shall be equipped with atmospheric vacuum relief should grate covers located therein become missing or broken. This vacuum relief system shall include at least one approved or engineered method of the type specified herein, as follows:

1. Safety vacuum release system conforming to ASME A112.19.17; or
2. An approved gravity drainage system.

~~AG106.4~~ **R325.4 Dual drain separation.** Single or multiple pump circulation systems have a minimum of two suction outlets of the approved type. A minimum horizontal or vertical distance of 3 feet (914 mm) shall separate the outlets. These suction outlets shall be piped so that water is drawn through them simultaneously through a vacuum-relief-protected line to the pump or pumps.

~~AG106.5~~ **R325.5 Pool cleaner fittings.** Where provided, vacuum or pressure cleaner fitting(s) shall be located in an accessible position(s) at least 6 inches (152 mm) and not more than 12 inches (305 mm) below the minimum operational water level or as an attachment to the skimmer(s).

Reason: We propose to have only the entire "entrapment avoidance" portion of AG106 moved into a mandatory part of the IRC to be appropriately numbered and placed by staff. Originally this proposal was submitted to Chapter 41 Swimming Pools to be a mandatory part of the IRC. Staff informed us that by agreement with the NEC, changes could not be made to this chapter and placed our proposal in the current non-mandatory location.

Since these provisions protect the health and safety of the public they should be a part of the body of the code as opposed to the appendix.

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

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

RB317–06/07

Appendix AG106.4; IBC 3109.5.3

Proponent: Gary S. Duren, President, Code Compliance, Inc.

THIS PROPOSAL IS ON THE AGENDA OF THE IRC BUILDING/ENERGY AND THE IBC GENERAL CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IRC

Revise as follows:

AG106.4 Dual Drain Separation. Single or multiple pump circulation systems shall be provided with a minimum of two (2) suction outlets of the approved type. A minimum horizontal or vertical distance of three feet (3") shall separate such outlets. These suction outlets shall be piped so that water is drawn through them simultaneously through a vacuum relief-protected line to the pump or pumps. The interconnecting pipe and fitting between the dual drains shall be not less than 3" (inches) nominal diameter.

PART II – IBC

Revise as follows:

3109.5.3 Dual drain separation. Single- or multiple-pump circulation systems shall be provided with a minimum of two suction outlets of the approved type. A minimum horizontal or vertical distance of 3 feet (914 mm) shall separate such outlets. These suction outlets shall be piped so that water is drawn through them simultaneously through a vacuum-relief-protected line to the pump or pumps. The interconnecting pipe and fitting between the dual drains shall be not less than 3" (inches) nominal diameter.

Reason: This change is submitted to eliminate the possibility of differential pressure condition that could potential entrap a young bather.

Cost Impact: This proposal may increase the cost of construction by approximately $20.00 for each pool.

PART I – IRC

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

PART II – IBC

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB318–06/07

Appendix G106.1 through G106.5, AG108 (New); IBC 3109.5 through 3109.5.4, Chapter 35 (New)

Proponent: Carvin DiGiovanni, IAF of the Association of Pool and Spa Professionals

THIS PROPOSAL IS ON THE AGENDA OF THE IRC BUILDING/ENERGY AND THE IBC GENERAL CODE DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IRC

1. Delete Section AG106.1 through AG106.5 and substitute as follows:

AG106.1 Suction entrapment avoidance. Pools, spas, hot tubs, catch basins and other similar bather accessible bodies of water associated with swimming pool construction shall be designed to produce circulation throughout the body of water and provide means to protect against user suction entrapment.

AG106.2 Surface skimming or perimeter overflow system. Fully submerged suction outlets (main drains) are not required when surface skimming or perimeter overflow systems provide 100% of the required system flow and a minimum of two return inlets spaced around the pool to ensure circulation of sanitizer.

AG106.3 Fully submerged suction outlets (main drains). Fully submerged manufactured suction outlets (main drains) for use in swimming pools, wading pools, spas, hot tubs and catch basins shall be listed by a nationally recognized testing laboratory in accordance with ASME/ANSI A112.19.8M. The maximum flow condition shall be used to define the flow rating of cover/grates and pipe sizes.

Field built sumps shall be in accordance with instructions of the cover/grate manufacturer. If instructions are not published, the opening of the suction pipe(s) shall be at least 1.5 (inside) diameters away from the bottom of the cover/grate.

AG106.4 Methods of entrapment avoidance. Entrapment avoidance of fully submerged suction outlets in pumped or gravity driven flow systems shall be achieved by one of the following methods:

AG106.4.1 Dual drains. A minimum of two (2) suction outlets shall be provided for each pump or pumps in the suction outlet system, separated by a minimum of three feet (3') [91.44 cm] measured from center to center of suction pipes or located on two (2) different planes; i.e. one (1) on the bottom and one (1) on the vertical wall, or one (1) each on two (2) separate vertical walls. The tee feeding from the common line between the suction outlets to the pump(s) shall be located approximately midway between the outlets with flow out of the branch. These suction outlets shall be plumbed such that water is drawn through them simultaneously through a common line to the system. The flow rating of each cover/grate shall be at least equal to the system's maximum flow rate.

When two outlets are flowing, the maximum velocity in the piping connecting them shall be 3 fps or 0.914 mps. The pipe from the branch of the last tee, carrying the combined flow of multiple outlets shall be limited to 6 fps or 1,829 mps in commercial facilities and 8 fps or 2,438 mps in residential facilities.

AG106.4.2 Three -or- more suction outlets (drains). Three or more listed suction outlets are piped such that the tee connections are placed approximately midway between the outlets they connect. The branch of each tee shall carry flow toward the pump.

The sum of the individual Flow Ratings for a system with three or more covers/grates shall be at least twice the maximum system flow rate. *(Example: Two (2) 100 GPM covers/grates and one (1) 60 GPM cover/grate, would have an allowable maximum system flow Rate of 130 GPM. (100 + 100 + 60) / 2 = 130).*

When three or more outlets are flowing, the maximum velocity in the piping connecting them shall be 3 fps or 0.914 mps. The pipe from the branch of the last tee, carrying the combined flow of multiple outlets shall be limited to 6 fps or 1,829 mps in commercial facilities and 8 fps or 2,438 mps in residential facilities.

The separation requirements for three or more suction outlets (drains) are subject to the same separation requirements as dual outlets, but the separation shall apply only to the most widely spaced outlets of the group.

AG106.4.3 Channel drain system. One or more channel grates shall be acceptable as protection against suction entrapment if the size of the uniformly perforated area is 4 inches (102mm) or greater in width and 31 inches (787mm) or greater in length or if tested and rated in compliance with ASME/ANSI A112.19.8M.

AG 106.4.4 Single unblockable suction outlet (drain). A single unblockable suction outlet is acceptable. It shall be piped directly to pump(s) through one or more lines. The flow rating of the cover/grate shall equal or exceed the maximum system flow. A single unblockable cover/grate shall be of any size and shape that a representation of the torso of the 99 percentile adult male cannot block it to the extent that it creates a body suction entrapment hazard. *(The torso is represented as a rectangle 18" x 23" (457 x 584 mm) with corners of radius 4" (102mm)*.The connection(s) from a single unblockable outlet shall be limited to 6 fps or 1.829 mps in commercial facilities and 8 fps or 2,438 mps in residential facilities.

AG106.4.5 Outlet sumps in series. Two manufactured sumps or field fabricated sumps with Listed suction outlet covers/grates piped in series, typically intended for debris removal when used, shall require the manufacturer to test and approve for the purpose, at least one of the following:

1. Listed Manufactured Safety Vacuum Release System (SVRS) ASME/ ANSI A112.19.17;
2. Engineered Vent System
   - 2.1. Suction lines vented to the atmosphere shall be designed and certified by a licensed professional engineer whose specifications include but are not limited to maximum flow rates, pipe size(s), Listed cover/grate (or skimmer) make and model, depth of vent connection and maximum equivalent distance from suction outlet to vent connection.
   - 2.2. Engineered vent systems shall be designed to perform such that when the suction outlet is completely blocked, the vacuum shall decay to the level present at the suction outlet prior to the suction outlet blockage within an elapsed time of 4.5 seconds.
   - 2.3. The vent line interface with atmosphere shall terminate with a fitting designed or modified to inhibit blockage or infestation and shall be clearly identified to discourage tampering;
3. One (1) additional suction outlet with Listed suction outlet cover/grate located a minimum of 18" (457mm) from the tee in the suction line to the pump(s).

AG106.5 Skimmers. Skimmers shall be vented to the atmosphere through openings in the lid, or through a separate vent pipe, or incorporate an Equalizer Line which shall be located on the wall with its center no more than 18" (457mm) below maximum operating level. It shall be protected by a Listed suction outlet cover/grate with a flow rating equal to the maximum system flow divided by the number of skimmers when piped through a common suction line, or the maximum flow rating of the skimmer, whichever is greater.

AG106.6 Wall vacuum fittings. When used, vacuum cleaner fitting(s) shall be Located in an accessible position(s) at least 6 inches (152mm) and no greater than 18 inches (457mm) below the water level and shall comply with IAPMO SPS 4 – "Special use suction fitting for swimming pools, spas and hot tubs (for suction side automatic swimming pool cleaners)". When not in use, the vacuum piping shall be equipped with a valve to remain in the closed position.

2. Add new standard as follows:

SECTION AG 108
STANDRDS

IAPMO SPS 4 –2002	Special Use Suction Fittings for Swimming Pools, Spas and Hot tubs (for suction side automatic swimming pool cleaners

PART II – IBC

1. Delete Section 3109.5 through 3109.5.4 and substitute as follows:

3109.5 Suction entrapment avoidance. Pools, spas, hot tubs, catch basins and other similar bather accessible bodies of water associated with swimming pool construction shall be designed to produce circulation throughout the body of water and provide means to protect against user suction entrapment.

3109.5.1 Surface skimming or perimeter overflow system. Fully submerged suction outlets (main drains) are not required when surface skimming or perimeter overflow systems provide 100% of the required system flow and a minimum of two return inlets spaced around the pool to ensure circulation of sanitizer.

3109.5.2 Fully submerged suction outlets (main drains). Fully submerged manufactured suction outlets (main drains) for use in swimming pools, wading pools, spas, hot tubs and catch basins shall be listed by a nationally recognized testing laboratory in accordance with ASME/ANSI A112.19.8M. The maximum flow condition shall be used to define the flow rating of cover/grates and pipe sizes.

Field built sumps shall be in accordance with instructions of the cover/grate manufacturer. If instructions are not published, the opening of the suction pipe(s) shall be at least 1.5 (inside) diameters away from the bottom of the cover/grate.

3109.5.3 Methods of entrapment avoidance. Entrapment avoidance of fully submerged suction outlets in pumped or gravity driven flow systems shall be achieved by one of the following methods:

3109.5.3.1 Dual drains. A minimum of two (2) suction outlets shall be provided for each pump or pumps in the suction outlet system, separated by a minimum of three feet (3') [91.44 cm] measured from center to center of suction pipes or located on two (2) different planes; i.e. one (1) on the bottom and one (1) on the vertical wall, or one (1) each on two (2) separate vertical walls. The tee feeding from the common line between the suction outlets to the pump(s) shall be located approximately midway between the outlets with flow out of the branch. These suction outlets shall be plumbed such that water is drawn through them simultaneously through a common line to the system. The flow rating of each cover/grate shall be at least equal to the system's maximum flow rate.

When two outlets are flowing, the maximum velocity in the piping connecting them shall be 3 fps or 0.914 mps. The pipe from the branch of the last tee, carrying the combined flow of multiple outlets shall be limited to 6 fps or 1,829 mps in commercial facilities and 8 fps or 2,438 mps in residential facilities.

3109.5.3.2 Three -or- more suction outlets (drains). Three or more listed suction outlets are piped such that the tee connections are placed approximately midway between the outlets they connect. The branch of each tee shall carry flow toward the pump.

The sum of the individual Flow Ratings for a system with three or more covers/grates shall be at least twice the maximum system flow rate. *(Example: Two (2) 100 GPM covers/grates and one (1) 60 GPM cover/grate, would have an allowable maximum system flow Rate of 130 GPM. (100 + 100 + 60) / 2 = 130).*

When three or more outlets are flowing, the maximum velocity in the piping connecting them shall be 3 fps or 0.914 mps. The pipe from the branch of the last tee, carrying the combined flow of multiple outlets shall be limited to 6 fps or 1,829 mps in commercial facilities and 8 fps or 2,438 mps in residential facilities.

The separation requirements for three or more suction outlets (drains) are subject to the same separation requirements as dual outlets, but the separation shall apply only to the most widely spaced outlets of the group.

3109.5.3.3 Channel drain system. One or more channel grates shall be acceptable as protection against suction entrapment if the size of the uniformly perforated area is 4 inches (102 mm) or greater in width and 31 inches (787 mm) or greater in length or if tested and rated in compliance with ASME/ANSI A112.19.8M.

3109.5.3.4 Single unblockable suction outlet (drain). A single unblockable suction outlet is acceptable. It shall be piped directly to pump(s) through one or more lines. The flow rating of the cover/grate shall equal or exceed the maximum system flow. A single unblockable cover/grate shall be of any size and shape that a representation of the torso of the 99 percentile adult male cannot block it to the extent that it creates a body suction entrapment hazard. *(The torso is represented as a rectangle 18" x 23" (457 x 584 mm) with corners of radius 4" (102 mm).* The connection(s) from a single unblockable outlet shall be limited to 6 fps or 1.829 mps in commercial facilities and 8 fps or 2,438 mps in residential facilities.

3109.5.3.5 Outlet sumps in series. Two manufactured sumps or field fabricated sumps with Listed suction outlet covers/grates piped in series, typically intended for debris removal when used, shall require the manufacturer to test and approve for the purpose, at least one of the of the following:

1. Listed Manufactured Safety Vacuum Release System (SVRS) ASME/ANSI A112.19.17;
2. Engineered Vent System
   - 2.1. Suction lines vented to the atmosphere shall be designed and certified by a licensed professional engineer whose specifications include but are not limited to maximum flow rates, pipe size(s), Listed cover/grate (or skimmer) make and model, depth of vent connection and maximum equivalent distance from suction outlet to vent connection.
   - 2.2. Engineered vent systems shall be designed to perform such that when the suction outlet is completely blocked, the vacuum shall decay to the level present at the suction outlet prior to the suction outlet blockage within an elapsed time of 4.5 seconds.
   - 2.3. The vent line interface with atmosphere shall terminate with a fitting designed or modified to inhibit blockage or infestation and shall be clearly identified to discourage tampering;
3. One (1) additional suction outlet with Listed suction outlet cover/grate located a minimum of 18" (457mm) from the tee in the suction line to the pump(s).

3109.5.4 Skimmers. Skimmers shall be vented to the atmosphere through openings in the lid, or through a separate vent pipe, or incorporate an Equalizer Line which shall be located on the wall with its center no more than 18" (457mm) below maximum operating level. It shall be protected by a Listed suction outlet cover/grate with a flow rating equal to the maximum system flow divided by the number of skimmers when piped through a common suction line, or the maximum flow rating of the skimmer, whichever is greater.

3109.5.5 Wall vacuum fittings. When used, vacuum cleaner fitting(s) shall be Located in an accessible position(s) at least 6 inches (152 mm) and no greater than 18 inches (457 mm) below the water level and shall comply with IAPMO SPS 4 – "Special use suction fitting for swimming pools, spas and hot tubs (for suction side automatic swimming pool cleaners)". When not in use, the vacuum piping shall be equipped with a valve to remain in the closed position.

2. Add new standard as follows:

CHAPTER 35
REFERENCED STANDARDS

IAPMO SPS 4 2000	Special Use Suction Fittings for Swimming Pools, Spas, and Hot Tubs (for suction side automatic swimming pool cleaners)

Reason: Justification for replacing the current code language. During recent years aquatics industry experts, safety experts, and researchers have studied the issue of suction entrapment in swimming pools, therapy spas, hot tubs, wading pools, and other bather accessible recreational aquatic facilities. These studies have included empirical data as well as scientific research.

Consensus indicates that there are five primary entrapment hazards:

Hair entrapment: can occur with inappropriate outlet cover design or excessive flow.

Limb entrapment: occurs with broken or missing cover/grates or uncovered sumps where the suction pipe is accessible to an arm or leg. Entrapment may be aggravated by swelling.

Body entrapment: occurs when a large portion of the body, such as back, stomach, or buttocks is held against a suction outlet, with or without cover, due to differential pressure.

Evisceration: is known to occur only with an uncovered sump when the buttocks of a young child seal the outlet. Typically, this occurs in wading pools. The process can occur essentially instantaneously as the inertia of the flowing water can produce a near vacuum.

Mechanical entrapment: usually involves jewelry or clothing becoming entangled in an outlet cover.

The current code does not address all five hazards. It is imperative that it does. The proposed language achieves this goal.

Current language contains options that **do not address** Evisceration, Hair or Mechanical entrapment and has limited mitigation value against Limb entrapment. This is fostering a false sense of security making the code dangerous. In addition, it is technologically and commercially restrictive because it favors certain technical options while excluding other viable technologies currently available.

In particular, it requires SVRS devices that vent to atmosphere, excluding devices that only shut off the pump, even though they conform to ANSI/ASME A112.19.17 cited in the current Section 3109.5.2, Item 1.

The current code is technically deficient and contains multiple recognized hazards:

1. Despite Section 3109.5.2 going from 12" x 12" (2003 code) to 18" x 23" size cover/grate, it is still wrong. The IBC codes use of the 18 x 23 dimension for a grate matches the maximum torso size of the 99 percentile man. Rather than being a safe size, it is the means for the greatest possible entrapping force. In the Draft standard ANSI/ASME A112.19.8, the cover/grate is required to have **EXCESS** area that will **NOT** be blocked, and allow the rated flow to pass with a small pressure drop so that the entrapping force on the bather is limited to a reasonable release effort. This still remains a dangerous size.
   Section 3109.5.2 exempts 18" X 23" or larger covers/grates from testing and implies that such a size is large enough to prevent entrapment. This creates a dangerous loophole that permits the use of drains not intended by the manufacturer for all applications. Specifically, the existing language allows direct suction applications where a single cover may be subjected to the full differential pressure capabilities of the pump. The current proposal addresses this loophole.
2. Section 3109.5.4 exempts pool cleaner fittings from testing and listing in accordance with the only standard available; IAPMO SP4 – *Special use suction fitting for swimming pools, spas and hot tubs (for suction side automatic swimming pool cleaners)*. This exemption is a step backwards in reintroducing a known hazard that was previously addressed by pool industry standards and local codes and ordinances the ICC code is replacing. The current proposal closes this loophole yet again.

The current code does not address the hazard with the highest fatality rate, hair entrapment. Hair entrapment is avoided by sizing the cover/grate for the maximum pump flow. The current language is deficient on two points, by exempting covers from testing, the maximum flow rating for the cover is unknown to everyone, and by not requiring the cover/grate not match the pump flow rate, there is no hair entrapment protection offered or contemplated. The current proposal addresses all these issues.

The current language under 3109.5.2, item 2, "An approved gravity drainage system" is vague, unenforceable, and opens multiple loopholes for hair, body, and limb entrapment hazards.

The above proposed language comes from the **BSR/IAF -7 200X, "American National Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs and Catch Basins", Draft 3, March 2006.**

The proposed language from the BSR/IAF -7 200X standard contains all known and available technologies to prevent all 5 areas of suction entrapment. It provides more comprehensive language and options.

This proposed IAF-7 draft standard underwent ANSI Public Review and Consensus Committee Ballot which resulted in approximately 300 comments in the initial ballot and additional comments in a second follow up ballot. The IAF -7 Standards Writing Committee has addressed all comments leading to a current 3rd Draft being readied for ANSI submission. The improvements made in the 3rd Draft are reflected in the above proposal and have been accepted by an overwhelming majority of ANSI voters sufficient to receive ANSI approval when submitted to ANSI this summer (2006).

A legal review of the above language has determined there are no proprietary terms used.

The new code language proposed herein is the direct result of the most extensive gathering of scientific research and empirical data on suction entrapment ever undertaken by any organization supported by two ANSI Ballots and Public Reviews. It addresses all the known hazards while allowing options and leaving room for further innovation.

Cost Impact: The code change proposal will increase the cost of construction.

Analysis: Results of review of the proposed standard will be posted on the ICC website by August 20, 2006.

PART I – IRC

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

PART II – IBC

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RB319–06/07
Appendix P101, P102 (New)

Proponent: Lawrence Brown, CBO, National Association of Home Builders (NAHB)

1. Revise as follows:

AP101 Fire sprinklers. An approved automatic fire sprinkler system shall be installed in new buildings and structures one-and two-family dwellings and townhouses in accordance with NFPA 13D ~~903.3.1 of the *International Building Code*~~.

2. Add new standard as follows:

APPENDIX P102
REFERENCED STANDARDS

NFPA 13D-02 Installation of Sprinkler Systems in One- and Two-family Dwellings and Manufactured Homes

Reason: As this Appendix is currently written, sending one to IBC Section 903.3.1 could either require a NFPA 13, 13R, or 13D system. This change inserts the applicable industry standard for fire sprinkler systems for one- and two-family dwellings. NFPA 13D is the same industry standard cited in the IBC for fire sprinkler systems for one- and two-family dwellings. In addition, this change helps the IRC remain a stand-alone code.

Cost Impact: The code change proposal will provide a lower cost system than a 13 or 13R system.

Analysis: Results of review of the proposed standard will be posted on the ICC website by August 20, 2006.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RE1–06/07
N1101.9 (New)

Proponent: Craig Conner, Building Quality, representing himself

Add new text as follows:

N1101.9 Performance based compliance. Where provisions of this code differ from provisions of the *International Energy Conservation Code*, provisions of this code shall be permitted to be used to define the standard reference design used for performance based compliance under Section 404 of the IECC.

Reason: Performance-based compliance is allowed by the IRC's reference to the IECC. Jurisdictions that use the IRC should also allow the IRC's provisions to define the "code-minimum home" (standard reference design) to which the proposed building is compared.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RE2–06/07

Proponent: Larry Shaw, Consultant, Maple Plain, MN

Revise as follows:

N1102.4.1 Building thermal envelope. The building thermal envelope shall be durably sealed to limit infiltration. The sealing methods between dissimilar materials shall allow for differential expansion and contraction. The following shall be caulked, gasketed, weatherstripped or otherwise sealed with an air barrier material, suitable film or solid material. Sealing methods and materials shall be applied in a way that does not restrict drainage of incidental moisture from around window assemblies.

1. All joints, seams and penetrations.
2. Site-built windows, doors and skylights.
3. Openings between window and door assemblies and their respective jambs and framing.
4. Utility penetrations.
5. Dropped ceilings or chases adjacent to the thermal envelope.
6. Knee walls.
7. Walls and ceilings separating the garage from conditioned spaces.
8. Behind tubs and showers on exterior walls.
9. Common walls between dwelling units.
10. Other sources of infiltration.

Reason: To add new language to enhance existing requirements and clarify the intent of proper window installation. Moisture is the most significant factor in the deterioration of buildings, and window assemblies are the most vulnerable to infiltration. The existing code language does not have specific, enforceable, code language to describe effective caulking and flashing techniques. For all points of moisture intrusion to be eliminated, the workmanship must be perfect. Even a perfectly flashed and caulked window will suffer degradation over time due to environmental conditions. For this reason, it is necessary to incorporate some redundancy in the process. It is inevitable that some moisture will enter the window frame opening. This moisture must be allowed to escape from the assembly to avoid structural damage and mold growth. When the area behind the nailing flange is obstructed, capillarity will restrict drainage. An air space or free draining material in a window assembly, behind the water shedding surface, is an excellent way to provide good drainage and convective air flow for drying. This can be accomplished by installing a barrier to prevent insulation or other materials from reaching the interior side of the nailing flange or installing a material that allows free draining and air movement. This drainage area or material will be less exposed to the elements and linear expansion, allowing it to last longer than exterior caulking, etc. This method has been tested under extreme conditions and proven to be effective.

Bibliography:
Research Highlights, Technical Series 03-124, CMHC
Keeping Walls Dry – Parts 1 & 2, CMHC, Dale Kerr – P. Eng.

Cost Impact: Initially, depending upon the methods used, there may be a slight increase in the cost of compliance due to labor and a small amount of materials. However, the benefits of ensuring moisture drainage and reducing the potential for structural damage and mold growth far outweigh the minor costs that may be involved.
Documentation of actual costs is difficult to acquire due to legal and privacy concerns.
The following are examples of costs that would be avoided based on anecdotal feedback from builders, remodelers, and from personal experience:

- Initial site visit= $200-$500
- R&R of single unit= $1,500-$5,000

R&R of multiple units with extensive damage has ranged from thousands of dollars to exceeding the value of the structure.

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

RE3–06/07
N1102.5.1

Proponent: Michael D. Fischer, The Kellen Company, representing The Window and Door Manufacturers Association

Revise as follows:

N1102.5.1 Maximum fenestration *U*-factor. The area weighted average maximum fenestration U-factor permitted using tradeoffs from Section N1102.1.3 in Zones 4-5 shall be 0.48 and Zones ~~6~~ 6 through 8 shall be 0.40 ~~0.55~~.

To comply with this section, the maximum U-factor for skylights shall be 0.75 in zones ~~6~~ 4 through 8.

Reason: The purpose of this code change proposal is to establish more effective fenestration U-factor trade-off maximums in the IRC consistent with the levels established in the comparable section of the IECC, substantially reduce the potential of occupant discomfort from cold windows, reduce the potential of condensation from cold windows, and save energy by avoiding thermostat increases to offset discomfort. The proposed revisions to the maximums will continue to permit reasonable flexibility through trade-offs, while ensuring that the potential of unlimited window area incorporated in the code in the last cycle does not result in window performance issues.

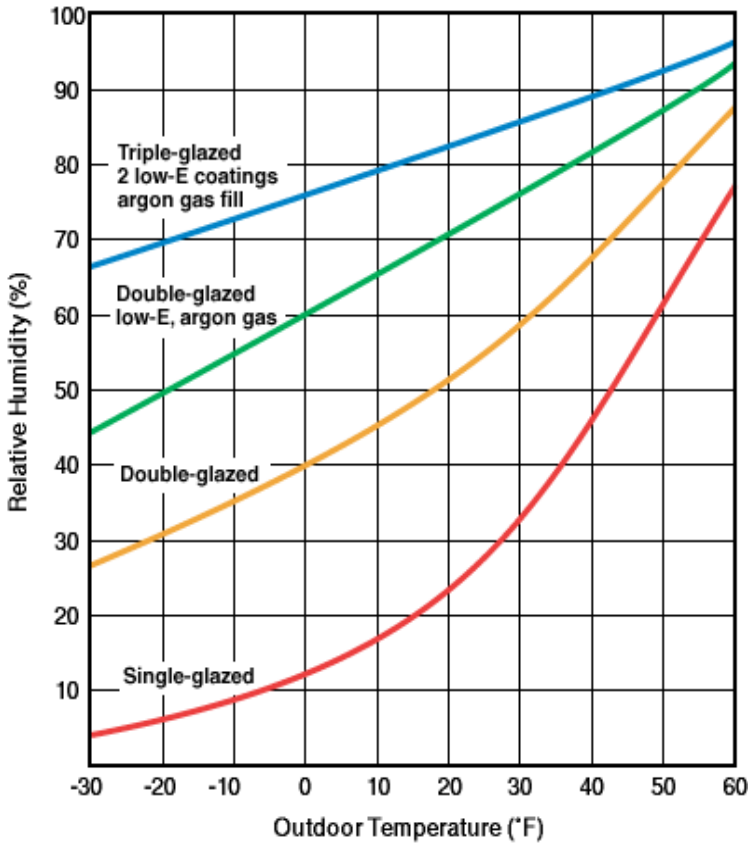
Revising N1102.5.1 as necessary to mirror its sister counterpart provision in the IECC is a big step toward establishing consistent maximum performance limits in the codes. It will enhance enforcement capabilities and streamline requirements. Section 1.3.1 of the *Code Development Process for the International Codes* states: "[t]he provisions of all Codes shall be consistent with one another so that conflicts between the codes do not occur." Since the IECC is the lead energy code, and the IRC references the IECC, the energy provisions of the IRC should be consistent with the IECC requirements. There is no issue of cost-effectiveness related to this proposed revision, since the prescriptive values, which have been found to be cost-effective, are all more stringent than these trade-off maximums.

In its current format, although the IRC version acknowledges the principle of and the need for U-factor limits, its limits are simply insufficient to ensure reasonable performance. Unlike the IRC, IECC section 402.6 establishes maximum fenestration U-factor trade-offs for zones 4-5 of 0.48, recognizing that these climate zones have significant heating requirements and the potential for discomfort and condensation. These values were established on a compromise basis for the IECC and should be adopted for the IRC as well. Similarly, the IECC establishes more effective limits in Zones 6-8, setting the bar at 0.40, rather than 0.55, recognizing that low-e windows are crucial in these very cold climates (the IECC Committee stated that as to this issue a 0.55 maximum U-factor was insufficient to insure adequate condensation resistance and occupant comfort). Finally, the IECC extends the skylights maximum of 0.75 across all of heating climate zones - zones 4 to 8, and the IRC's application of this maximum only to zones 6-8, should be similarly extended.

Such limits are also necessary given the change to the IRC during the previous code cycles from a 15% window area maximum to permit unlimited window area without tying additional window area to increased energy performance. In exchange for allowing unlimited glazing area, the limits proposed here and included in the IECC are intended to guarantee a baseline level of reasonable window energy performance no matter how many windows are installed.

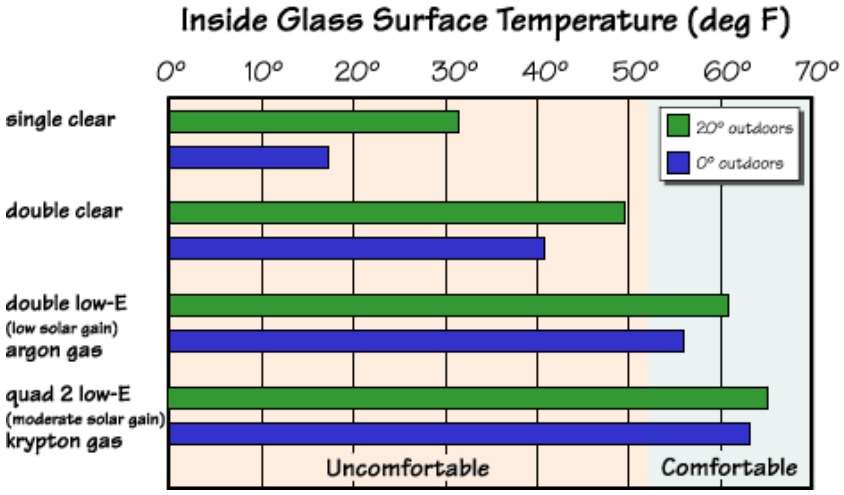
The likelihood of condensation is directly related to the product's U-factor, the indoor relative humidity and the winter design temperature. In a nutshell, the lower the U-factor, the higher the room-side glass temperature will be and the better a window will be able to support higher relative humidity before condensation forms on the glass. Even relatively mild heating climates – like zones 4-5 – are affected by condensation with reasonable levels of relative humidity because of low winter design temperatures. A reasonable U-factor maximum helps provide a degree of reasonable resistance to such condensation. The 0.48 maximum selected by the IECC for zones 4-5 and the 0.40 maximum for zones 6-8 are the minimum reasonable choices for these zones.

The following chart produced by the Lawrence Berkley National Laboratory (and found on the Efficient Window Collaborative website – www.efficientwindows.org) shows the condensation potential for different types of configurations at various outdoor temperature and indoor relative humidity conditions.



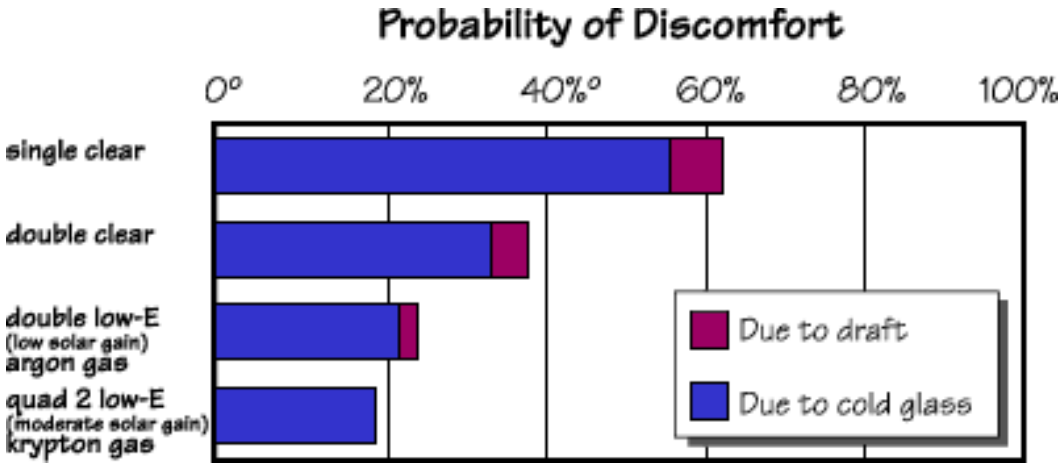
This graph indicates that condensation will occur at any point on or above the curves. For example, at 0°F a double-glazed clear window represented by the gold line (approximately 0.55 U-factor) will have condensation present at 40% relative humidity. For a double-pane low-E window (0.48 in an aluminum frame, 0.40 U-factor or better in a vinyl or wood frame) – represented by the green line – the relative humidity could be as high as 60% before condensation would occur. This graph clearly shows that as the U-factor of windows improves, there is a much smaller range of conditions where condensation will occur, and establishes the need for this level of U-factor limits.

The following two charts produced by the Lawrence Berkley National Laboratory (and found on the Efficient Window Collaborative website – www.efficientwindows.org) illustrate the comfort issues with using the wrong windows (higher U-factors) in colder climates. Specifically, the first chart shows the temperature of the inside glass surface on various windows. The 0.55 U-factor requirement in the IRC would be comparable to double clear glass. The 0.40 U-factor requirement in the IECC for zones 6-8 would be comparable to double low-e.



Pacific A 3

Similarly, the second graph shows the probability of winter discomfort from the same types of glass.



Pacific A 4

It is clear from these two charts that reasonable comfort requires low-e windows in heating climates, particularly with unlimited window area now allowed. It should be noted that even at a 0.40 U-factor, such a window allows far more heat loss than an un-insulated frame wall. For all of these reasons, the IRC provision should be revised to be consistent with the IECC provision.

With adoption of consistent requirements, window suppliers and manufacturers will be able to streamline inventory and production to meet code. Approval of this proposal will reduce variations in local requirements and help reduce homeowner dissatisfaction due to discomfort.

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

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF