

CRCA 26th Annual Trade Show
Friday, January 16, 2008 – Oakbrook Terrace, IL

Don't Get Left Behind!
What's New in Roofing Code
Requirements

presented by

Mark S. Graham
Associate Executive Director, Technical Services
National Roofing Contractors Association



NRCA

International Code Council (ICC)

- *International Building Code*
- *International Residential Code*
- *International Energy Conservation Code*

A Member of the International Code Family®



INTERNATIONAL BUILDING CODE®

2006

A Member of the International Code Family®

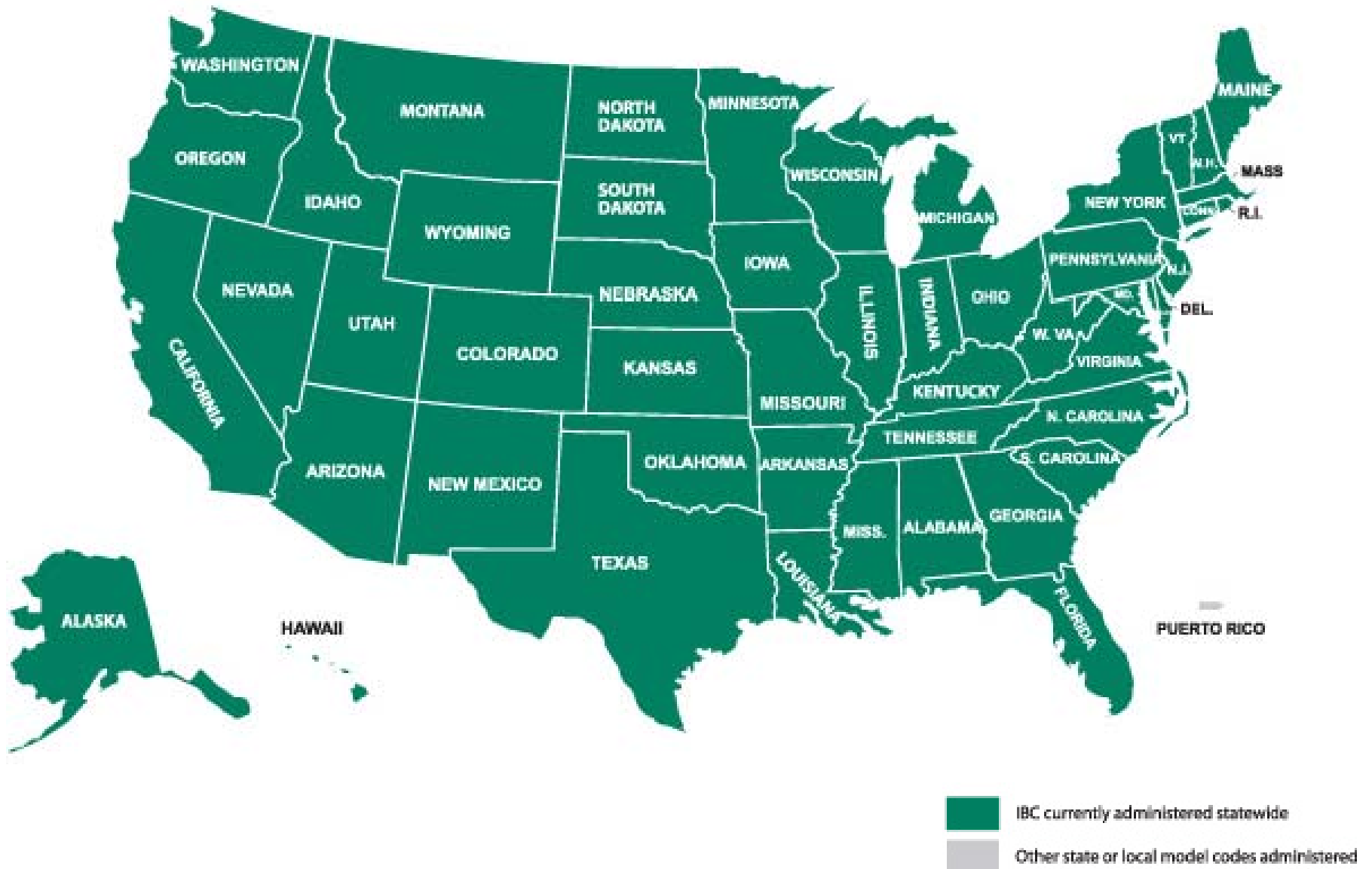


INTERNATIONAL RESIDENTIAL CODE®

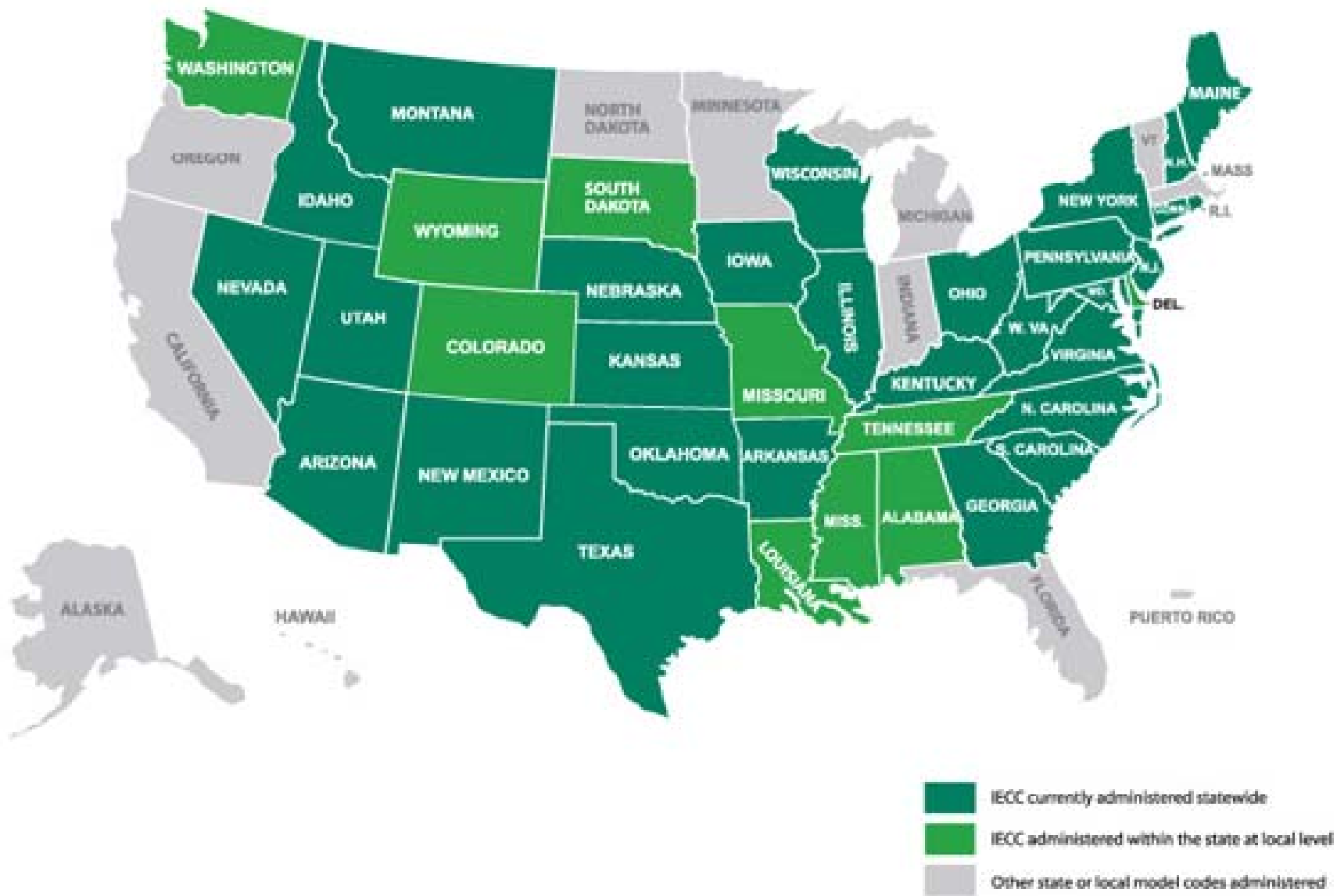
FOR ONE- AND TWO-FAMILY DWELLINGS

2006

INTERNATIONAL BUILDING CODE ADOPTION MAP



INTERNATIONAL ENERGY CONSERVATION CODE ADOPTION MAP



Title XIV “California Energy Code”
doesn’t apply here

The Commercial Building Insulation World Is About To Change!



For the first time in over 18 years, ASHRAE has proposed increases to the minimum required roof and wall insulation levels in Standard 90.1 –the national model energy code for commercial buildings. The more important news is that the Standard 90.1 committee has approved these proposed changes for the next version of the Code.

What does this mean?

The above-deck roof insulation requirements currently at R-15 go to R-20 – a 33% increase in roof insulation levels. Similar increases are proposed for walls. The next step in this process is ratification of the committee's approval by various levels of the ASHRAE Standards development process, culminating in acceptance by the ASHRAE Board of Directors – expected in June of this year.

Why is the ASHRAE Board expected to adopt these new values?

The Board charged the 90.1 committee to deliver a new commercial building energy standard that is 30% more efficient than the 2004 version by 2010! The actual changes are climate zone and building type specific. The ASHRAE Standard has various performance compliance mechanisms – from prescriptive requirements to computer simulations and trade-offs. **But regardless of the code compliance approach used, these new insulation values establish a new benchmark for commercial building energy efficiency.**

This is ASHRAE's first step to support the emerging trend to make buildings significantly more efficient in many ways these new insulation levels are long overdue. Architects across the country are already installing insulation at levels that exceed these values. Those architects and designers seeking beyond-code recognitions (such as LEED, Energy Star, Building America, etc.) will now go even further to deliver advanced building envelopes and higher levels of insulation.

While issues of implementation and timing are yet to be fully resolved, once approved by the ASHRAE Board these new values will represent a new national standard against which all codes will be compared. **Architects, specifiers and other certifying professionals will have a new standard of care to meet regarding commercial building energy efficiency.**

Stay tuned. It's about to get very exciting.

ASHRAE Climate Zone Map.

PIMA and its members endorse advanced building envelopes that exceed the code and offer superior energy performance. In all climate zones, insulation can dramatically help to reduce cooling loads and lower energy costs. This is supported by both ASHRAE requirements and independent analysis that concludes that

Below please find their recommended R-values for the ASHRAE Climate Zones:

Commercial Roof Insulation Recommendations



Zones 1 thru 3
PIMA Recommended R-value – R-20



Zones 4 thru 6
PIMA Recommended R-value – R-25



Zones 7 and 8
PIMA Recommended R-value – R-30

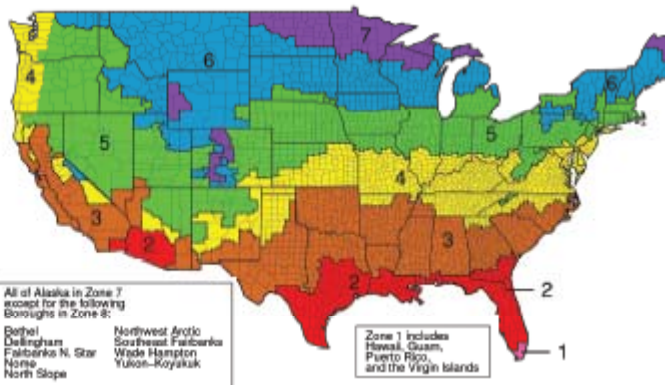
Wall Insulation Recommendations



Zones 1 thru 3
PIMA Recommended R-value – R-20



Zones 4 thru 8
PIMA Recommended R-value – R-25



The ASHRAE Standard addresses building envelope and system requirements for commercial buildings, residential buildings higher than three stories, and semi-conditioned buildings (warehouses, etc.). It is the nation's model standard for establishing the energy performance requirements of these building types.

In order to provide the most up-to-date technical and industry information about polyiso insulation, PIMA—the trade association of the polyiso industry—researches and posts technical bulletins, advisories and case studies. These documents are published as a public service to help expand the knowledge of architects, consultants, building owners and roofing contractors and to build consensus on the performance characteristics of polyiso. For continued updates and additional information on this important topic visit www.polyiso.org, or contact a polyiso manufacturer.

PIMA

For over 20 years, PIMA (Polyisocyanurate Insulation Manufacturers Association) has served as the unified voice of the rigid polyiso industry proactively advocating for safe, cost-effective, sustainable and energy efficient construction.

PIMA produces technical bulletins in an effort to address frequently asked questions about polyiso insulation. PIMA's technical bulletins are published to help expand the knowledge of specifiers and contractors and to build consensus on the performance characteristics of polyiso. Individual companies should be consulted for specifics about their respective products.

PIMA's membership consists of manufacturers of polyiso insulation and suppliers to the industry. Our members account for a majority of all of the polyiso produced in North America.

SAFETY

Polyiso insulation, like wood and other organic building materials is combustible. Therefore, it should not be exposed to an ignition source of sufficient heat and intensity (e.g., flames, fire, sparks, etc.) during transit, storage or product application. Consult the product label and/or the PIMA members' Material Safety Data Sheets (MSDS) for specific safety instructions. In the United States, follow all regulations from OSHA, NFPA and local fire authorities; in Canada, follow all regulations from Health Canada Occupational Health and Safety Act (WHMIS) and local fire authorities.

For more information on polyisocyanurate insulation, visit www.polyiso.org



PIMA



External Fire Classifications

IBC 2006, Table 1505.1

TABLE 1505.1^{a,b}
MINIMUM ROOF COVERING CLASSIFICATION
FOR TYPES OF CONSTRUCTION

IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
B	B	B	C ^c	B	C ^c	B	B	C ^c

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m².

- a. Unless otherwise required in accordance with the *International Wildland-Urban Interface Code* or due to the location of the building within a fire district in accordance with Appendix D.
- b. Nonclassified roof coverings shall be permitted on buildings of Group R-3 and Group U occupancies, where there is a minimum fire-separation distance of 6 feet measured from the leading edge of the roof.
- c. Buildings that are not more than two stories in height and having not more than 6,000 square feet of projected roof area and where there is a minimum 10-foot fire-separation distance from the leading edge of the roof to a lot line on all sides of the building, except for street fronts or public ways, shall be permitted to have roofs of No. 1 cedar or redwood shakes and No. 1 shingles.

Purpose of the Code

IBC Sec. 101.3

101.3 Intent. The purpose of this code is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property from fire and other hazards attributed to the built environment and to provide safety to fire fighters and emergency responders during emergency operations.

Scope of Code

IBC 2006, Sec. 101.2

101.2 Scope. The provisions of this code shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

Exception: Detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories above grade plane in height with a separate means of egress and their accessory structures shall comply with the *International Residential Code*.

Scope of Roofing Chapter

IBC 2006, Sec. 1501

1501.1 Scope. The provisions of this chapter shall govern the design, materials, construction and quality of roof assemblies, and rooftop structures.

Minimum Roof Slope

New construction -- IBC Sec. 1507

1507.10.1 Slope. Built-up roofs shall have a design slope of a minimum of one-fourth unit vertical in 12 units horizontal (2-percent slope) for drainage, except for coal-tar built-up roofs that shall have a design slope of a minimum one-eighth unit vertical in 12 units horizontal (1-percent slope).

Minimum Roof Slope

Reroofing -- IBC Sec. 1510.1--Exception

1510.1 General. Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 15.

Exception: Reroofing shall not be required to meet the minimum design slope requirement of one-quarter unit vertical in 12 units horizontal (2-percent slope) in Section 1507 for roofs that provide positive roof drainage.

Reroofing

IBC 2006, Sec. 1510

1510.3 Recovering versus replacement. New roof coverings shall not be installed without first removing all existing layers of roof coverings where any of the following conditions occur:

1. Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
2. Where the existing roof covering is wood shake, slate, clay, cement or asbestos-cement tile.
3. Where the existing roof has two or more applications of any type of roof covering.

Exceptions:

1. Complete and separate roofing systems, such as standing-seam metal roof systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings.
2. Metal panel, metal shingle and concrete and clay tile roof coverings shall be permitted to be installed over existing wood shake roofs when applied in accordance with Section 1510.4.
3. The application of a new protective coating over an existing spray polyurethane foam roofing system shall be permitted without tear-off of existing roof coverings.

1510.4 Roof recovering. Where the application of a new roof covering over wood shingle or shake roofs creates a combustible concealed space, the entire existing surface shall be covered with gypsum board, mineral fiber, glass fiber or other approved materials securely fastened in place.

1510.5 Reinstallation of materials. Existing slate, clay or cement tile shall be permitted for reinstallation, except that damaged, cracked or broken slate or tile shall not be reinstalled. Existing vent flashing, metal edgings, drain outlets, collars and metal counterflashings shall not be reinstalled where rusted, damaged or deteriorated. Aggregate surfacing materials shall not be reinstalled.

Roof Drainage

IBC 2006, Sec. 1503.4

[P] 1503.4 Roof drainage. Design and installation of roof drainage systems shall comply with the *International Plumbing Code*.

1503.4.1 Gutters. Gutters and leaders placed on the outside of buildings, other than Group R-3, private garages and buildings of Type V construction, shall be of noncombustible material or a minimum of Schedule 40 plastic pipe.

Attic Ventilation

IBC 2006, Sec. 1503.5

1503.5 Roof ventilation. Intake and exhaust vents shall be provided in accordance with Section 1203.2 and the manufacturer's installation instructions.

Aggregate Surfacing

IBC 2006, Sec. 1505.8

1504.8 Gravel and stone. Gravel or stone shall not be used on the roof of a building located in a hurricane-prone region as defined in Section 1609.2, or on any other building with a mean roof height exceeding that permitted by Table 1504.8 based on the exposure category and basic wind speed at the building site.

TABLE 1504.8
MAXIMUM ALLOWABLE MEAN ROOF HEIGHT PERMITTED FOR
BUILDINGS WITH GRAVEL OR STONE ON THE ROOF IN AREAS
OUTSIDE A HURRICANE-PRONE REGION

BASIC WIND SPEED FROM FIGURE 1609 (mph)^b	MAXIMUM MEAN ROOF HEIGHT (ft)^{a,c}		
	Exposure category		
	B	C	D
85	170	60	30
90	110	35	15
95	75	20	NP
100	55	15	NP
105	40	NP	NP
110	30	NP	NP
115	20	NP	NP
120	15	NP	NP
Greater than 120	NP	NP	NP

Edge Metal Flashing

IBC 2006 Sec. 1504.5

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

Alternative Provisions

IBC 2006, Sec. 104.11

104.11 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.



104.11.1 Research reports. Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall consist of valid research reports from approved sources.

104.11.2 Tests. Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the building official shall have the authority to require tests as evidence of compliance to be made at no expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the building official shall approve the testing procedures. Tests shall be performed by an approved agency. Reports of such tests shall be retained by the building official for the period required for retention of public records.

Asphalt Shingles

IBC 2009, Sec. 1507.2.7

Table 1507.2.7 Add new table to read as shown: (FS191-06/07 Part I)

TABLE 1507.2.7
CLASSIFICATION OF ASPHALT ROOF SHINGLES ^a

MAXIMUM BASIC WIND SPEED FROM FIGURE 1609	ASTM D 3161	ASTM D 7158 ^b
85	A,D, or F	D,G or H
90	A,D, or F	D,G or H
100	A,D, or F	G or H
110	F	G or H
120	F	G or H
130	F	H
140	F	H
150	F	H

For SI: 1 foot = 304.8 mm.

- a. Asphalt Shingles shall be tested in accordance with ASTM D 3161 or ASTM D 7158. Refer to this table for selection of the appropriate product classification(s).
- b. The standard calculations contained in ASTM D 7158 assume exposure category B or C and building height of 60 feet or less. Additional calculations are required for conditions outside of these assumptions.



**National Roofing Contractors Association
10255 West Higgins Road, Suite 600
Rosemont, IL 60018-5607**

(847) 299-9070

1-800-323-9545

FAX: (847) 299-1183

E-mail: nrca@nrca.net

Web site: www.nrca.net