



**91<sup>st</sup> Annual Convention & Trade Show**  
Harrah's Resort – Atlantic City, NJ  
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## **Building code update**

presented by

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Vice President, Technical Services  
National Roofing Contractors Association (NRCA)



## **Prerequisites**

- Intermediate- to advanced-level
- Some knowledge of code requirements
- General knowledge of 2012 I-codes
- Understand...I am the messenger

## Some background

- The I-codes are “model codes” developed by the International Code Council (ICC)
- Model codes serve as the technical basis for state or local code adoption
- The code provides the minimum legal requirements for building construction...and operation
- The code is enforced by the “authority having jurisdiction” (AHJ)
- The code can also provide a basis for construction claims-related litigation

## International Code Council (ICC)



### **THE I-CODES**

ICC Performance Code (ICCPC)  
International Building Code (IBC)  
International Energy Conservation Code (IECC)  
International Existing Building Code (IEBC)  
International Fire Code (IFC)  
International Fuel Gas Code (IFGC)  
International Green Construction Code (IgCC)  
International Mechanical Code (IMC)  
International Plumbing Code (IPC)  
International Private Sewage Disposal Code (IPSDC)  
International Property Maintenance Code (IPMC)  
International Residential Code (IRC)  
International Swimming Pool and Spa Code (ISPSA)  
International Wildland-Urban Interface Code (IWUIC)  
International Zoning Code (IZC)

## Publication cycle

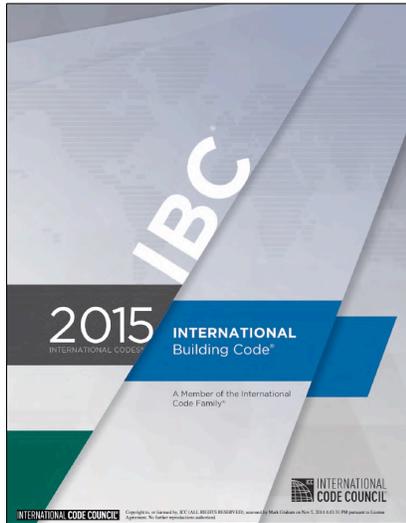
- 2000 edition
  - 2003 edition
  - 2006 edition
  - 2009 edition
  - 2012 edition
  - 2015 edition
  - 2018 edition (finalized, being printed)
- Three-year code development and publication cycle

## Roofing-specific provisions

Discussed in this presentation



## **International Building Code, 2015 Edition**



- Applicable to all buildings and structures, excepts those applicable to IRC 2015
- Roofing-related requirements:
  - Ch. 10-Means of egress
  - Ch. 12-Interior environment
  - Ch. 13-Energy efficiency
  - Ch. 15-Roof assemblies and rooftop structures
  - Ch. 16-Structural design
  - Ch. 20-Aluminum
  - Ch. 22-Steel
  - Ch. 24-Glass and glazing
  - Ch. 26-Plastic

## **Ch. 10 – Means of egress**

### **Sec. 1015.6-Mechanical equipment, systems and devices**

- *Guards* have been required for components where services is required within 10 ft. of roof edge or where elevated walkways are raised above 30 inches
- Exception now added for permanent fall arrest/restraint anchors
- Devices shall be reevaluated for possible replacement when the entire roof covering is replaced

## **Ch. 12-Interior environment**

### **Sec. 1203.2-Ventilation required**

- 1:150 rule with 1:300 exception
- 1:300 exception reworded and more consistent with IRC
- Unvented attic and unvented enclosed rafter provisions add in Sec. 1203.3-Unvented attics and unvented enclosed rafter assemblies

## **Ch. 13-Energy efficiency**

### **Sec. 1301.1.1-Criteria**

- Reference to the International Energy Conservation Code (IECC)
- Reference to IECC 2015 added

## **Ch. 15-Roof assemblies and rooftop structures**

### **Sec. 1502-Definitions**

- References to chapter-specific definitions in Ch. 2-Definitions
- New terms and definitions added:
  - Building-integrated photovoltaic (BIPV) product
  - Photovoltaic module
  - Photovoltaic panel
  - Photovoltaic panel system
  - Photovoltaic shingles
  - Radiant barrier

## **Ch. 15-Roof assemblies and rooftop structures**

### **Sec. 1504.1-Wind resistance of roofs**

- Wind resistance requirements for asphalt shingles relocated from Sec. 1507 to Sec. 1504.1.1
- Asphalt shingle wind resistance classification tables combined into Table 1504.1.1-Classification of asphalt shingles

[Continued...]

## **Ch. 15-Roof assemblies and rooftop structures**

### **Sec. 1504.1-Wind resistance of roofs**

- Wind resistance of structural metal panel roof systems is now subdivided:
  - Thru-fastened: FM 4474, UL 580 or ASTM E1592
  - Standing seam: ASTM E1592 or UL 580
- Aluminum panels now allowed to be designed (testing not required) using the Aluminum Association's *Aluminum Design Manual*

## **Ch. 15-Roof assemblies and rooftop structures**

### **Sec. 1505-Fire classification**

- Slate over ASTM D226, Type II underlayment on combustible decks now Class A without testing
- BIPV products now need to be *listed* and *labeled* for fire classification

## **Ch. 15-Roof assemblies and rooftop structures**

### **Sec. 1507-Requirements for roof coverings**

- New requirements for PV shingles added in Sec. 1507.17-Photovoltaic shingles
  - Deck requirements
  - Slope
  - Underlayment
  - Fasteners/attachment
  - Material standards (UL 1703)
  - Wind resistance (ASTM D3161)

## **Ch. 15-Roof assemblies and rooftop structures**

### **Sec. 1505-Roof insulation**

- FM 4450 removed, NFPA 276 added
- ASTM C1278 (fiber-reinforced gypsum board) added
- ASTM C1177 (glass-faced gypsum board) added

## **Ch. 15-Roof assemblies and rooftop structures**

### **Sec. 1509-Radiant barriers installed above deck**

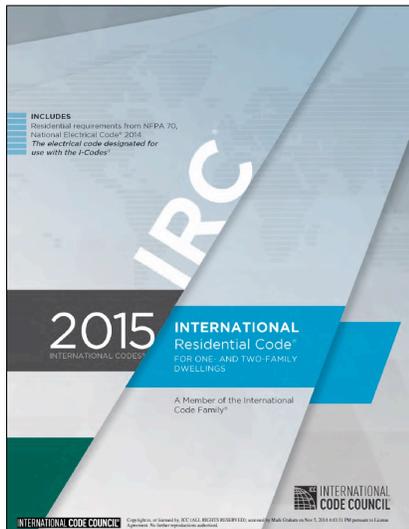
- New section and requirements
  - FM 4450 or UL 1256 testing
  - Comply with ASTM C1313

## **Ch. 15-Roof assemblies and rooftop structures**

### **Sec. 1511-Reroofing** (previously Sec. 1510)

- Re-covering/replacement languages reformatted
- Exception added clarifying secondary drains do not need to be added in roof system re-covering and replacement projects

## **International Residential Code, 2015 Edition**



- Applicable to one- and two-family dwellings and townhouses no more than three stories in height
- Roofing-related requirements:
  - Ch. 8-Roof/ceiling construction
  - Ch. 9-Roof assemblies

## **Ch. 9-Roof assemblies**

Most changes incorporated into IBC 2015, Chapter 15 have also been incorporated into IRC 2015

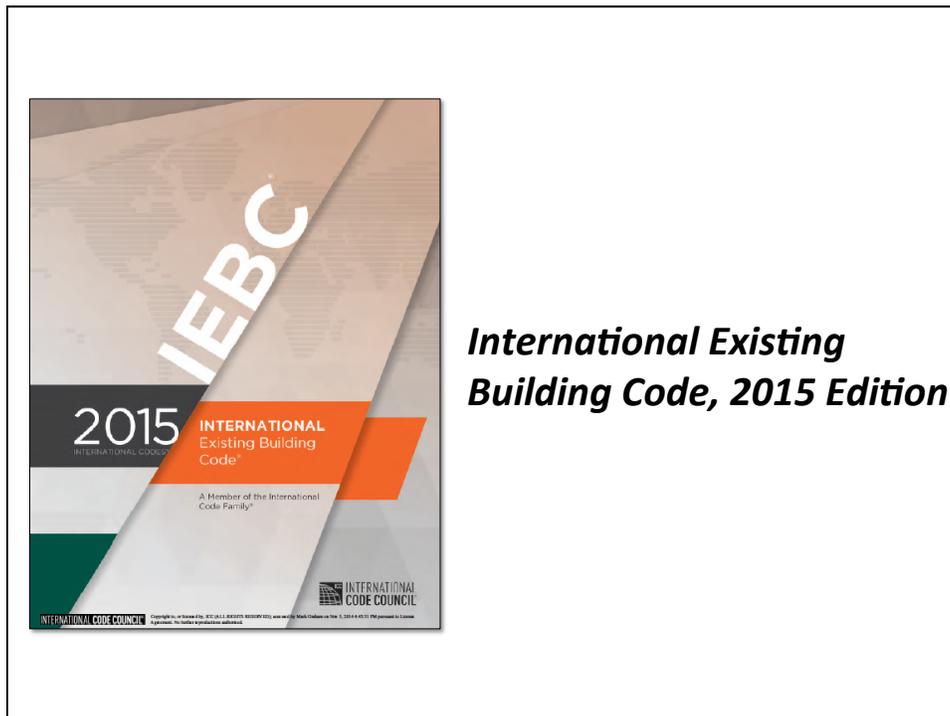
## **Ch. 9-Roof assemblies**

### **Sec. R905-Requirements for roof coverings**

- Underlayment requirements consolidated into Sec. R905.1.1-Underlayment and Table R905.1.1(1)-Underlayment types
- Wood shingle/shake nails:
  - Hot-dipped galvanized or Type 304 stainless-steel
  - Type 316 stainless-steel within 15 miles of salt water coastal areas and for fire-retardant and pressure-impregnated, preservative-treated wood shingles/shakes

## **Ch. 9-Roof assemblies**

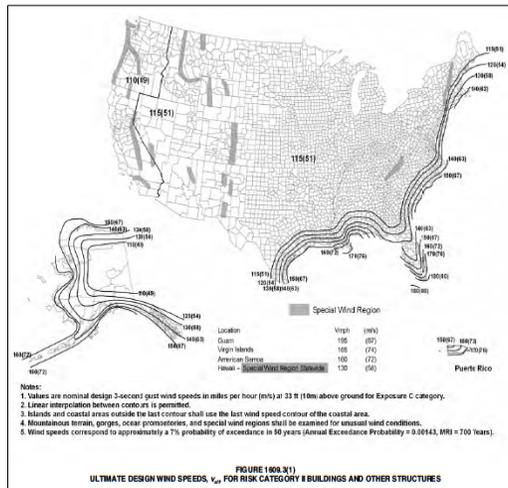
- Rooftop PV requirements:
  - Removed from IRC 2012, Ch. 23-Solar energy systems (IRC 2015, Ch. 23-Solar thermal energy systems)
  - Added Chapter 3-Building planning, Sec. R324-Solar energy systems
  - Added R905.16-Photovoltaic shingles
  - Added R907-Rooftop-mounted photovoltaic systems
  - Added R909-Rooftop-mounted photovoltaic panel systems



### **IEBC 2015's reroofing-related provisions**

- Sec. 706: Reroofing provisions identical to IBC 2012
- Sec. 707.2: Additional gravity load triggers upgrade to IBC 2015's structural requirements
- In AHJ's that require reroofing permits:
  - Sec. 707.3.1: Reinforce unreinforced parapets in Seismic Design Category Regions D, E or F
  - Sec. 707.3.2: Roof diaphragm load evaluation where  $V_{ULT} > 115$  mph

## Where is $V_{ULT} > 115$ mph?



- Atlantic and Gulf of Mexico coastlines
- Alaska coastline
- Hawaii and US territories
- “Special wind regions” (shaded)
- Also (except in CA, OR and WA):
  - Buildings that represent a substantial hazard to human life
  - Essential facilities (hospitals)

**TECH TODAY**

### New roofing rules

IEBC 2015 presents challenges when reroofing  
 by Mark S. Graham

For the first time, the *International Existing Building Code 2015 Edition (IEBC 2015)* includes specific code requirements applicable to reroofing. IEBC 2015 also provides additional and sometimes more complex code requirements than those contained in the *International Building Code (IBC)* and *International Residential Code (IRC)*.

**Reroofing requirements**  
 IBC and IRC were developed and are maintained with the primary intent of applying to new construction. One exception is both codes also address reroofing—re-covering and replacing existing roof coverings on existing buildings.

**Where adopted, IEBC 2015's structural reroofing requirements may be more stringent**

For example, in IBC 2015, reroofing is addressed in Chapter 15—Roof Assemblies and Rooftop Structures, Section 1511—Reroofing. Similar requirements are included in IBC's Chapter 16—Roof Assemblies and Rooftop Structures, Section 1608—Reroofing, specifically address re-covering and replacing existing roof coverings.

**Additional requirements**  
 IEBC 2015 scope indicates a “... shall apply to the repair, alteration, change of occupancy, addition to and relocation of existing buildings.” Inland terms are defined in Chapter 2—Definitions.

New definitions have been added in IEBC 2015 for reroofing, roof increase, roof repair and roof replacement. The terms and their definitions are the same as those in IBC. IEBC 2015 classified work on existing buildings into three categories: Level 1, Level 2 and Level 3.

Level 1 alterations include the removal and replacement of the covering of existing mansard, domes, cupolas, or fixtures using new materials, elements, equipment or fixtures that serve the same purpose. Reroofing projects are considered Level 1 alterations.

Level 2 and Level 3 alterations are larger in scope. For example, Level 3 alterations apply when the work area exceeds 50 percent of the building floor area.

IEBC 2015 Chapter 7—Alterations—Level 1 includes a new section, Section 706—Reroofing, that was not included in IEBC's previous editions. This section's requirements are identical to those of IBC 2012's Section 1511—Reroofing.

IEBC 2015's Section 707—Structural includes some additional requirements applicable to reroofing.

Section 707.2—Addition or Replacement of Roofing or Replacement of Equipment indicates when roof system replacement results in additional dead load structural components supporting the new roofing material need to comply with IBC. Exceptions to this requirement include where the dead load does not increase element forces by more than 3 percent; buildings designed in accordance with IBC's conventional light-frame construction methods in IBC; or when the new second layer weighs less than 3 pounds per square foot.

Section 707.3—Additional Requirements for Reroof Permits provides additional structural requirements for projects where the authority having jurisdiction (AHJ) requires reroofing permits.

Section 707.3.1 requires unobstructed masonry parapets for buildings where more than 25 percent of the roof area is being reroofed in Seismic Design Category D, E or F or has new parapet bracing installed to resist IBC's seismic forces.

Section 707.3.2 requires buildings located in high-wind regions ( $V_{ULT}$  greater than 115 mph or in special wind regions) that are designed with roof diaphragms (roof decks) to be evaluated for structural adequacy. This requirement applies when more than 50 percent of the diaphragm is replaced during roof system replacement. The roof diaphragm, connections of the roof diaphragm to roof framing members and roof-to-wall connections are required to be evaluated using the current code's wind loads. If the diaphragm and connections are not capable of resisting 75 percent of the current code's wind loads, they must be strengthened or replaced according to IBC's requirements.

**Being knowledgeable**  
 When adopted, IEBC 2015's structural reroofing requirements may be more stringent than IBC's and IRC's reroofing provisions.

Designers should determine whether IEBC 2015 is applicable and clearly indicate any additional work that is required for compliance on the construction documents.

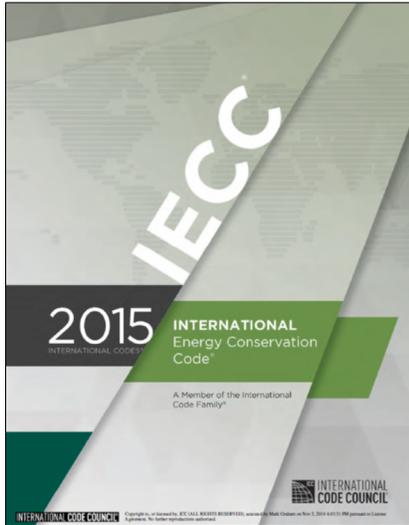
The International Code Council, publisher of IEBC 2015, indicates the code currently applies in California and Colorado and in specific jurisdictions in Massachusetts, Mississippi, Oklahoma, Washington, West Virginia and Wyoming. Local AHJs can verify whether IEBC 2015 applies. ■■■

MARK S. GRAHAM is NERCA's vice president of technical services.

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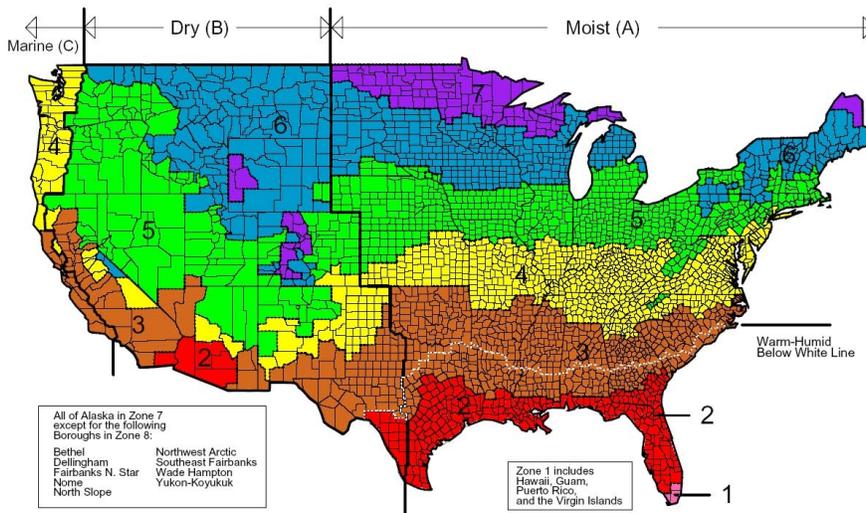
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 September 2016  
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### International Energy Conservation Code, 2015 Edition



- Applicable to all buildings, including existing buildings (reroofing)
- Format:
  - Commercial provisions (C) vs. Residential provisions (R)
  - Ch. 1-Scope and Admin.
  - Ch. 2-Definitions
  - Ch. 3-General requirements
  - Ch. 4-Energy efficiency
  - Ch. 5-Existing buildings
  - Ch. 6-Reference standards

### IECC 2015, Fig. C301.1-Climate zones



## **Ch 4[CE]-Commercial energy efficiency**

### **Sec. C401.2-Application**

- Reference to ASHRAE 90.1 changed from 2010 edition to 2013 edition

## **Ch 4[CE]-Commercial energy efficiency**

### **Sec. C402-Building envelope requirements**

- Section reformatted
- Low-energy buildings exempted:
  - Less than 3.4 Btu/h · ft<sup>2</sup> or 1.0 watt/ ft<sup>2</sup> of floor area
  - No *conditioned space*
  - Greenhouses
- Equipment buildings exempted (Sec. C402.1.2)

## Ch 4[CE]-Commercial energy efficiency

### **Sec. C402.1.3-Insulation component R-value-based method**

- Use Table C402.1.3

### **Sec. C402.1.4-Assembly U-factor, C-factor or F-factor-based method**

- Use Table C402.1.4

## Roofing-specific adaptation of Table C402.1.3

Commercial Buildings (Insulation component R-value-based method)

| Climate zone | Assembly description           |                 |                                              |      |
|--------------|--------------------------------|-----------------|----------------------------------------------|------|
|              | Insulation entirely above deck | Metal buildings | Attic and other                              |      |
| 1            | R-20ci (all other)             | R-19 + R-11 LS  | R-38                                         |      |
|              | R-25ci (Group R)               |                 |                                              |      |
| 2            | R-25ci                         |                 |                                              |      |
| 3            |                                |                 |                                              |      |
| 4            | R-30ci                         |                 | R-38 (except Marine 4)                       |      |
| 5            |                                |                 | R-38 (all other)<br>R-49 (Group R, Marine 4) |      |
| 6            |                                |                 | R-25 + R-11 LS                               | R-49 |
| 7            | R-35ci                         |                 | R-30 + R-11 LS                               |      |
| 8            |                                |                 |                                              |      |

ci = Continuous insulation; LS = Liner system

## **R-value determination**

IECC 2015, Section C303.1.4-Insulation Product Rating

**C303.1.4 Insulation product rating.** The thermal resistance (R-value) of insulation shall be determined in accordance with the U.S. Federal Trade commission R-value rule (CFR Title 16, Part 460) in units of  $h \times ft^2 \times ^\circ F/Btu$  at a mean temperature of 75°F (24°C).

What about tapered insulation?

## **Tapered insulation**

*International Energy Conservation Code, 2015 Edition*

**C402.2.2 Roof assembly.** The minimum thermal resistance (R-value) of the insulating material installed either between the roof framing or continuously on the roof assembly shall be as specified in Table C402.2, based on construction materials used in the roof assembly. Skylight curbs shall be insulated to the level of roofs with insulation entirely above deck or R-5, whichever is less.

**Exceptions:**

1. Continuously insulated roof assemblies where the thickness of insulation varies 1 inch (25 mm) or less and where the area-weighted U-factor is equivalent to the same assembly with the R-value specified in Table C402.2.
2. ...

IECC Commentary indicates Exception 1 applies to tapered insulation systems.

## **2015 IECC Code and Commentary**

### Tapered insulation

“...The exception to this section permits a roof that is “continuously insulated” to have areas that do not meet the required *R*-values, provided that the area-weighted values are equivalent to the specified insulation values. This type of insulation referred to as tapered insulation is where the roof insulation varies to provide slope for drainage...”

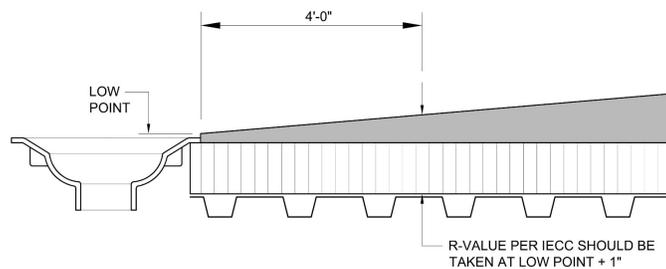
[continued...]

## **2015 IECC Code and Commentary**

### Tapered insulation

“...This 1-inch (25 mm) limitation does not prevent the provisions from being applied to roofs that have a greater variation; it simply does not allow the additional thickness to be factored into the average insulation values. Where the variation exceeds 1 inch (25 mm), it would be permissible to go to the thinnest spot and measure the *R*-value at that point (for the example call this Point “a”). Then go to a point that is 1 inch (25 mm) thicker than Point “a” and measure the *R*-value there (for the example, call this Point “b”). The remaining portions of the roof that are thicker than the additional 1-inch (25 mm) portion (Point “b”) would simply be assumed to have the same *R*-value that Point “b” had. All portions of the roof that meet or exceed the Point “b” *R*-value would simply use the Point “b” *R*-value when determining the area weighted *U*-factor for the roof. “

## Graphically depicted...



## Hunter Panels' Tech Topic #R105

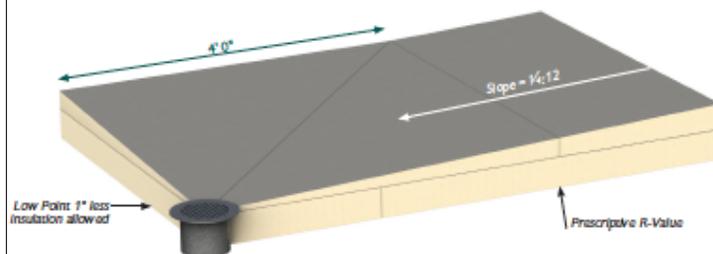


HUNTER PANELS ROOFING TECH TOPIC #R105

**Question:** Does an Average R-Value that meets the Prescriptive requirement satisfy Code standards?  
**Answer:** No. The terminology "Average R-Value" for tapered systems is an outdated term and not recognized by the IECC. There is an exception provided that allows the minimum thickness to be up to 1" less than the prescriptive R-Value (at 1/4" per foot slope) as long as the system R-Value meets or exceeds that Prescriptive R-Value.

**Example:** Zone 6 requires an R=30 minimum, which is 5.2" thick. This exception will allow the minimum thickness to be 4.2" at the low point, or 5.2", 4' away from the drain on a 1/4" per foot tapered system.

**IECC 2015, SEC. C402.2 ROOF ASSEMBLY**  
EXCEPTION 2 ALLOWS A 1-INCH INSULATION THICKNESS VARIATION



## **Ch 4[CE]-Commercial energy efficiency**

### **Sec. C402.3-Roof solar reflectance and thermal emittance**

- Climate zones 1, 2 and 3, low-slope roofs over cooled, conditioned spaces (some exceptions)
- Three-year aged solar reflectance 0.55 and three-year thermal emittance of 0.75, or three-year aged solar reflectance index of 64
- Aged calculation method based upon CRRC-1-12 (Sec. C402.3.1)

## **Ch 4[CE]-Commercial energy efficiency**

### **Sec. C402.5-Air leakage-thermal envelope (Mandatory)**

- All Climate zones, except 2B (IECC 2012 exempted Climate zones 1, 2, and 3)
- Whole building testing (ASTM E779); allowable maximum air leakage rate of 0.40 cfm/ft<sup>2</sup>
- Materials (Sec. C402.5.1.2.1) and Assemblies (C402.5.1.2.2) options
- Deemed-to-comply Materials options:
  - Closed cell SPF, minimum 1.5 pcf density,
  - Built-up roofing membrane
  - Modified bituminous roof membrane
  - Fully-adhered single-ply roof membrane

## **Ch. 4[CE]-Commercial energy efficiency**

### **Sec. C503-Alterations**

- New exception to Sec. 503.1-General:  
“4. *Air barriers* shall not be required for *roof recover* and roof membrane replacement where the *alterations* or renovations to the building do not include *alterations*, renovations or *repairs* to the remainder of the building envelope.”



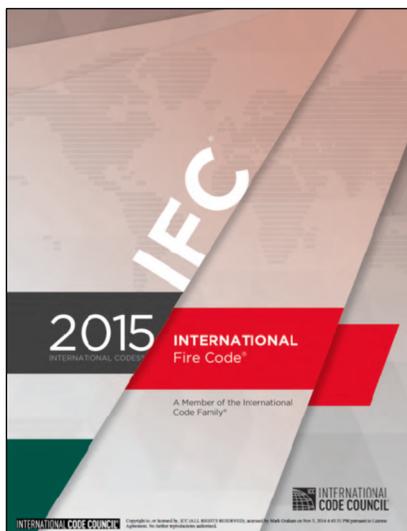
### ***Guidelines for Air Retarders in Roof Assemblies***

- Ch. 1: IECC and ASHRAE
- Ch. 2: Industry research
- Ch. 3: Recommendations

### **Some key points...**

- Building and roof system designers are responsible for proper design....
- Construction Documents should clearly denote locations, materials, application methods and details
- NRCA considers a continuous, air-impermeable roof membrane to function as an air retarder
  - Built-up roof system
  - Polymer-modified bitumen roof system
  - Single-ply membrane roof system

### **International Fire Code, 2015 Edition**



#### Applicability:

- Structures, facilities and conditions
- Existing conditions and operations

## **Roofing-related provisions**

*International Fire Code, 2015 Edition*

- Sec. 303-Asphalt kettles
- Sec. 317-Rooftop gardens
- Sec. 605.11-Solar photovoltaic systems
- Sec. 905.3.8-Rooftop gardens
- Sec. 3317-Safeguarding roofing operations

## **Ch. 6-Building services and systems**

### **Sec. 605.11-Solar photovoltaic power systems**

- Section reorganized
- New requirements applicable to Group R3 buildings (low-occupancy boarding houses, care facilities)

## **International Plumbing Code, 2015 Edition**



- Applicable to all plumbing systems, except those applicable to IRC 2015
- Roofing-related requirements:
  - Ch. 9-Storm drainage

## **Ch. 11-Storm drainage**

### **Sec. 1101.7-Roof drainage**

- Design based upon maximum possible water depth; assume drains are blocked.
- [Sec. 1105.2-Roof drain flow rate] Based upon head of water above the roof drain.

### **Sec. 1103-Traps**

- Leaders and storm drains connected to a building sewer system shall not be required to be trapped.

## **Ch. 11-Storm drainage**

### **Sec. 1101.6-Size of conductors, leaders and storm drains**

- Design roof drainage based on flow rate of roof drain, Table 1106.2-Storm drain pipe sizing (gpm) and Table 1106.3-Vertical leader sizing (gpm)
- Design gutters based upon flow rate from the roof surface, Table 1106.6-Horizontal gutter sizing (gpm) and Table 1106.3-Vertical leader sizing (gpm)

## **Alternative materials, design and methods of construction and equipment**

- IBC 2015, Sec. 104.11
- IRC 2015, Sec. R104.11
- IECC 2015, Sec. C102.1 and Sec. R102.1
- IFC 2015, Sec. 104.9
- IPC 2015, Sec. 105.2

## Professional Roofing, June 2008

Tech Today

### Other options

Take advantage of alternative approval provisions in building codes  
 by Mark S. Graham

**BUILDING CODES** by their nature tend to be limiting—set up time, design, materials and construction methods to those specifically prescribed in codes and meeting code prescriptive requirements. However, most states contain provisions that allow building officials to approve alternatives that are not specifically permitted by the code.

You should be aware of these alternative approval provisions because they apply to an increasing number of roofing products and roof systems.

#### Alternative approval

The 2006 edition of the International Building Code (IBC) includes the following alternative approval provisions:  
 "IBC 11. Alternative materials, design and methods of construction and equipment.  
 The provisions of the 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 material, design or method of construction shall be approved where the building official finds that the proposed design is workmanlike and complies with the intent of the provisions of this code, and that the material, method or work is for the purpose intended, at least the equivalent of

that prescribed in this code for quality, strength, effectiveness, fire resistance, durability and safety."

#### Evaluation reports

To assist in evaluating alternatives, building officials likely will request supporting data in the form of valid research reports from recognized sources.

ICC Evaluation Service (ICES) Inc. issues research reports, commonly referred to as "evaluation reports," based on technical evaluations the company performs on building products, components and materials. Because ICES is a subsidiary of the International Code Council, which publishes the ICC EES evaluation reports, they are considered by most building officials to be valid research reports when considering alternative approvals.

ICES evaluation reports are available for hundreds of manufacturers' building components, products and systems, including many roofing products. These reports can be obtained from the individual manufacturers that have requested evaluations and on ICC's Web site.

#### Roofing products

ICC's alternative approval provisions provide a viable means for you or your building official's approval of newly developed

roofing products and roof systems and those not yet specifically permitted by IBC.

Roofing products that are not specifically permitted by IBC but have evaluation reports include synthetic single-ply underlayment, fiber cement and synthetic shingles, shales and slates metal shingles, some specialty asphalt shingles and hot, fluid-applied membrane roof systems.

ICC's alternative approval provisions also can be used to gain a building official's approval for roof green types the code does not specifically address.

For example, vegetative green roof systems are described in the code; however, the code does not contain specific structural and wind-resistance classification information that is considered appropriate for vegetative green roof systems.

As discussed, I am not aware of any manufacturer of vegetative green roof systems that has obtained a specific evaluation report. However, I hope future features will pursue evaluation reports to help roofing professionals obtain building official's approvals through the code's alternative approval provisions.

Additional information about building code requirements specific to roofing products and roof systems is provided in *The NIBS Building Code Manual, Third Edition*. ■■■

Mark S. Graham is IBC's associate executive director of technical services.

For links to ICC's Web site and lists of ICC EES acceptance criteria and evaluation reports, as well as a link to more information about The NIBS Building Code Manual, Third Edition, log on to [www.professionalroofing.net](http://www.professionalroofing.net).

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## ICC/NIBS survey

[www.ICCSafe.org](http://www.ICCSafe.org)



INTERNATIONAL CODE COUNCIL

People Helping People Build a Safer World™

### THE FUTURE OF CODE OFFICIALS

Results and Recommendations from a Demographic Survey

AUGUST 2014

National Institute of BUILDING SCIENCES

### **A typical code official**

- Between the ages of 55 and 64
- A jurisdiction employee (rather than third-party provider)
- Works in a one- to nine-person jurisdiction, less than 75,000 in population
- Earns between \$50,000 and \$75,000 (mean 2012 salary was \$51,017 according to the U.S. Census Bureau)
- Has 26 to 35 years of experience in the building industry, but only five to 15 years as a code official
- Entered the code profession in their 30s; held one to three prior jobs; first job was as a tradesperson

### **A typical code official - continued**

- May possess a bachelor's degree (27 percent), or have no additional education beyond high school (25 percent)
- If they hold a bachelor's degree, it is probably in engineering, but it could be in management, accounting, finance, etc.
- Holds a professional license, certificate, certification or other credential
- Current role is as a inspector, plan reviewer or department manager; possibly all of these roles
- Expect to leave the profession in the next five to 15 years.



## The NRCA Roofing Manual - 2017

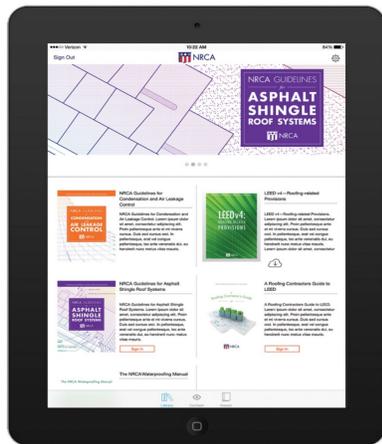


## Manual online

[www.nrca.net](http://www.nrca.net)

- Available to all NRCA member registered users (multiple users per member company)
- “Members only” section, click on “My account”, the “Electronic file”
- View, download and print

## NRCA App



- NRCA App available on the Apple Store and Google Play Store for tablets
- iPhone App also available
- Register within App as being an NRCA member
- The NRCA Roofing Manual is viewable to NRCA members
- Favorite and send pages features

**Questions?**



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