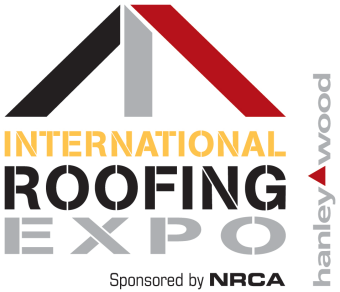


International Roofing Expo

February 5, 2013
San Antonio, Texas

NRCA Technical Operations Committee: Technical Programs and Issues

presented by

National Roofing Contractors Association

NRCA Technical Operations Committee: Technical Programs and Issues

Scott Baxter

Chairman, NRCA Technical Operations Committee

President

CRS of Monroe, Inc.

Monroe, NC

NRCA Technical Operations Committee

Scott Baxter	CRS or Monroe, Inc., Monroe, NC
Dane Bradford	Bradford Roof Management, Billings, MT
Dave Karel	Garlock-French Corporation, Minneapolis, MN
Rod Petrick	Ridgeworth Roofing Co., Inc., Frankfurt, IL
Kyle Thomas	Thomas Roofing Co., Mobile, AL
Rob Therrien	The Melanson Co., Inc., Keene, NH
Dave Tilsen	Tilsen Roofing Co., Madison, WI

Other technical committees & task forces

- Manual Update Committee
- PV Task Force
- CERTA Task Force
- Cold Weather Application Task Force

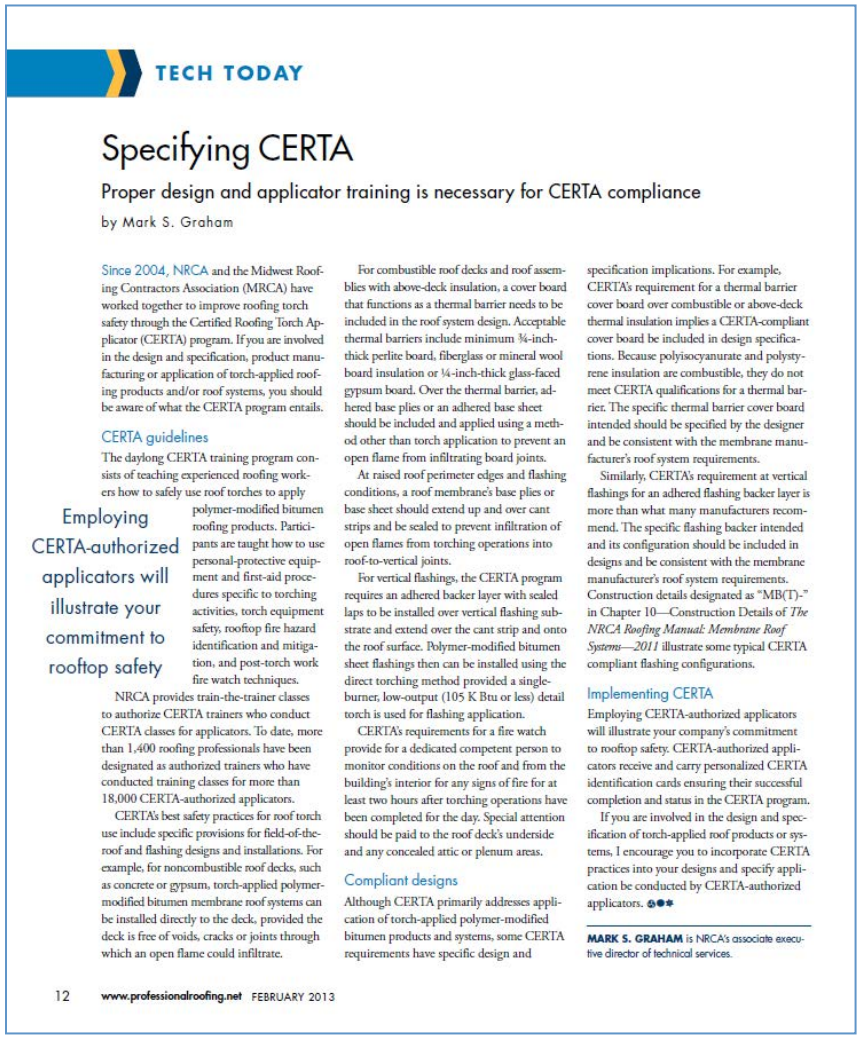
Technical Services section staff

Mark S. Graham	Associate Executive Director, Technical Services
Tom Bollnow	Senior Director, Technical Services
Joan Crowe, AIA	Director, Technical Services
Maciek Rupar	Director, Technical Services
Jason Wilen, AIA	Director, Technical Services
Nick Gallagher	Project Assistant, Technical Services

NRCA technical programs

- CERTA
- ANSI/SPRI ES-1 certification
- Roof Wind Designer
- EnergyWise
- Online library
- Requests for technical assistance

CERTA



TECH TODAY

Specifying CERTA

Proper design and applicator training is necessary for CERTA compliance

by Mark S. Graham

Since 2004, NRCA and the Midwest Roofing Contractors Association (MRCA) have worked together to improve roofing torch safety through the Certified Roofing Torch Applicator (CERTA) program. If you are involved in the design and specification, product manufacturing or application of torch-applied roofing products and/or roof systems, you should be aware of what the CERTA program entails.

CERTA guidelines

The daylong CERTA training program consists of teaching experienced roofing workers how to safely use roof torches to apply polymer-modified bitumen roofing products. Participants are taught how to use personal-protective equipment and first-aid procedures specific to torching activities, torch equipment safety, rooftop fire hazard identification and mitigation, and post-torch work fire watch techniques.

Employing CERTA-authorized applicators will illustrate your commitment to rooftop safety

NRCA provides train-the-trainer classes to authorize CERTA trainers who conduct CERTA classes for applicators. To date, more than 1,400 roofing professionals have been designated as authorized trainers who have conducted training classes for more than 18,000 CERTA-authorized applicators.

CERTA's best safety practices for roof torch use include specific provisions for field-of-the-roof and flashing designs and installations. For example, for noncombustible roof decks, such as concrete or gypsum, torch-applied polymer-modified bitumen membrane roof systems can be installed directly to the deck, provided the deck is free of voids, cracks or joints through which an open flame could infiltrate.

For combustible roof decks and roof assemblies with above-deck insulation, a cover board that functions as a thermal barrier needs to be included in the roof system design. Acceptable thermal barriers include minimum ¾-inch-thick perlite board, fiberglass or mineral wool board insulation or ¼-inch-thick glass-faced gypsum board. Over the thermal barrier, adhered base plies or an adhered base sheet should be included and applied using a method other than torch application to prevent an open flame from infiltrating board joints.

At raised roof perimeter edges and flashing conditions, a roof membrane's base plies or base sheet should extend up and over cant strips and be sealed to prevent infiltration of open flames from torching operations into roof-to-vertical joints.

For vertical flashings, the CERTA program requires an adhered backer layer with sealed laps to be installed over vertical flashing substrate and extend over the cant strip and onto the roof surface. Polymer-modified bitumen sheet flashings then can be installed using the direct torching method provided a single-burner, low-output (105 K Btu or less) detail torch is used for flashing application.

CERTA's requirements for a fire watch provide for a dedicated competent person to monitor conditions on the roof and from the building's interior for any signs of fire for at least two hours after torching operations have been completed for the day. Special attention should be paid to the roof deck's underside and any concealed attic or plenum areas.

Compliant designs

Although CERTA primarily addresses application of torch-applied polymer-modified bitumen products and systems, some CERTA requirements have specific design and specification implications. For example, CERTA's requirement for a thermal barrier cover board over combustible or above-deck thermal insulation implies a CERTA-compliant cover board be included in design specifications. Because polyisocyanurate and polystyrene insulation are combustible, they do not meet CERTA qualifications for a thermal barrier. The specific thermal barrier cover board intended should be specified by the designer and be consistent with the membrane manufacturer's roof system requirements.

Similarly, CERTA's requirement at vertical flashings for an adhered flashing backer layer is more than what many manufacturers recommend. The specific flashing backer intended and its configuration should be included in designs and be consistent with the membrane manufacturer's roof system requirements. Construction details designated as "MB(T)-" in Chapter 10—Construction Details of *The NRCA Roofing Manual: Membrane Roof Systems—2011* illustrate some typical CERTA compliant flashing configurations.

Implementing CERTA

Employing CERTA-authorized applicators will illustrate your company's commitment to rooftop safety. CERTA-authorized applicators receive and carry personalized CERTA identification cards ensuring their successful completion and status in the CERTA program.

If you are involved in the design and specification of torch-applied roof products or systems, I encourage you to incorporate CERTA practices into your designs and specify application be conducted by CERTA-authorized applicators.

MARK S. GRAHAM is NRCA's associate executive director of technical services.

- Established by MRCA in 1986
- Joint agreement with NRCA in 2003
- 1,400+ trainers
- 18,000+ applicators
- Substantially improved fire safety record

NRCA ANSI/SPRI ES-1 certifications

- In response to manufacturers' development of ANSI/SPRI ES-1 and code requirements
- NRCA has been testing since 1999
- Two certifications:
  - Intertek Testing Services, N.A.
  - Underwriters Laboratories, Inc. (UL)
- 186 companies participating
- Open to all NRCA members

Roof Wind Designer

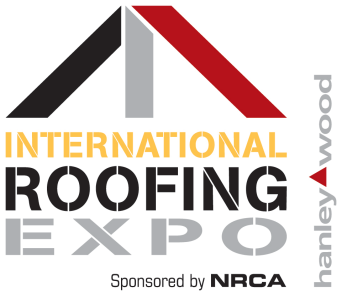
www.roofwinddesigner.com

- Developed jointly by NRCA, MRCA and NERCA
- No cost to users
- Determine building-specific wind loads:
  - ASCE 7-05
  - ASCE 7-10
- Determine required wind resistances
- 11,544 projects

EnergyWise

energywise.nrca.net

- Developed by NRCA in cooperation with the Roofing Industry Alliance for Progress
- Determine R-value requirements:
  - IECC 2006 and 2012
  - ASHRAE 90.1-99, -04, -07 and -10
  - ASHRAE 189.1-09
- Calculates heating/cooling costs
- Verifies proper vapor retarder placement
- 5,425 projects



Introduction to NRCA's Online Applications: EnergyWise Roof Calculator and Roof Wind Designer

Thursday, February 7, 2013, 9:30 a.m.

NRCA online library

http://www.nrca.net/rp/technical/search/default.aspx

- Search by author, publisher, title or keyword
- NRCA-owned and non-copyright documents are downloadable
- 8,044 documents accessible

Requests for technical assistance

1-800-323-9545 or www.nrca.net/contact.aspx

- Access to Technical Services section staff
- Used by NRCA members, building owners, A/E/Cs, code officials, media, etc.
- Questions range from simple to complex
- 3,000+ calls per year

IBHS 2012 Commercial Wind Test

IBHS Research Center

Richburg, SC

- 21,000 sq. ft. test chamber
- 2,375 sq. ft. turntable
- 105 fans with 350 hp motors
- 24 million CFM
- Recreate a Category 3 hurricane (111 to 129 mph)

IBHS 2012 Commercial Wind Test

- Two side-by-side buildings
- "Common" is typical of 20-year old masonry construction
- "Stronger" is similar with less than +5% cost enhancements
- NRCA supplied roof edge metal

IBHS 2012 Commercial Wind Test

- At 70 mph gust, metal roof edge on “Common” failed
- At 110 mph gust, roll-up door (back of building) on “Common” failed
- 2 x 4 launched to break windows (simulated windborne debris)
- At a 105 mph gust, masonry wall on “Common” collapsed
- “Stronger” withstood 127 mph (test ended)

NRCA Technical Operations Committee: Technical Programs and Issues

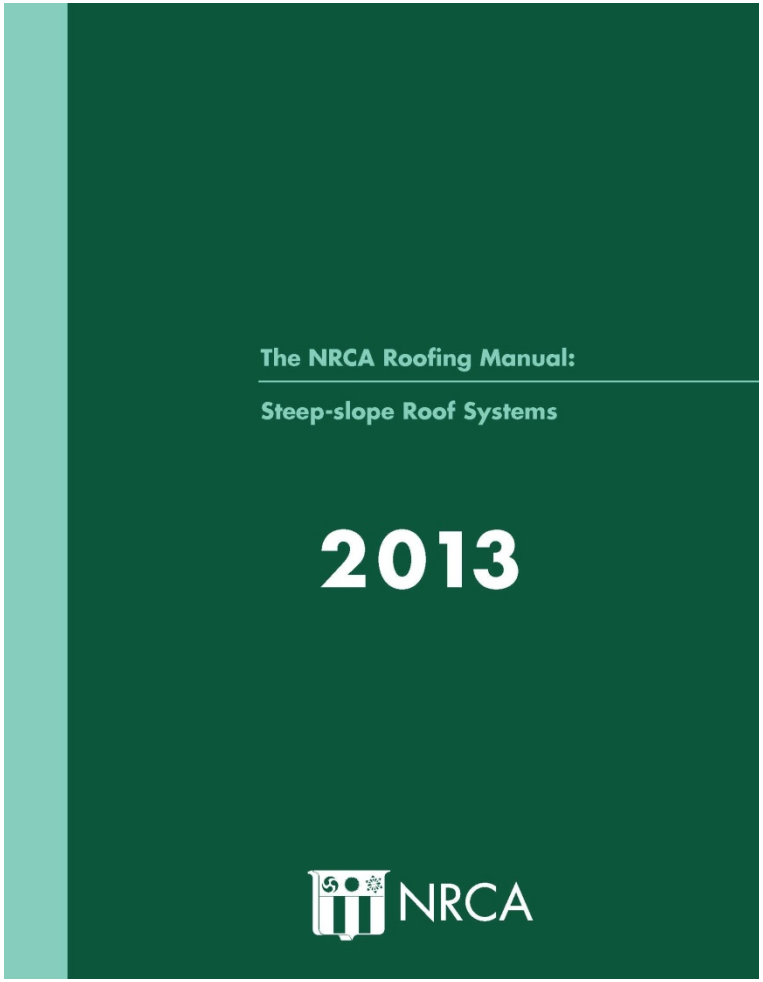
Dave Karel

President

Garlock-French Corporation

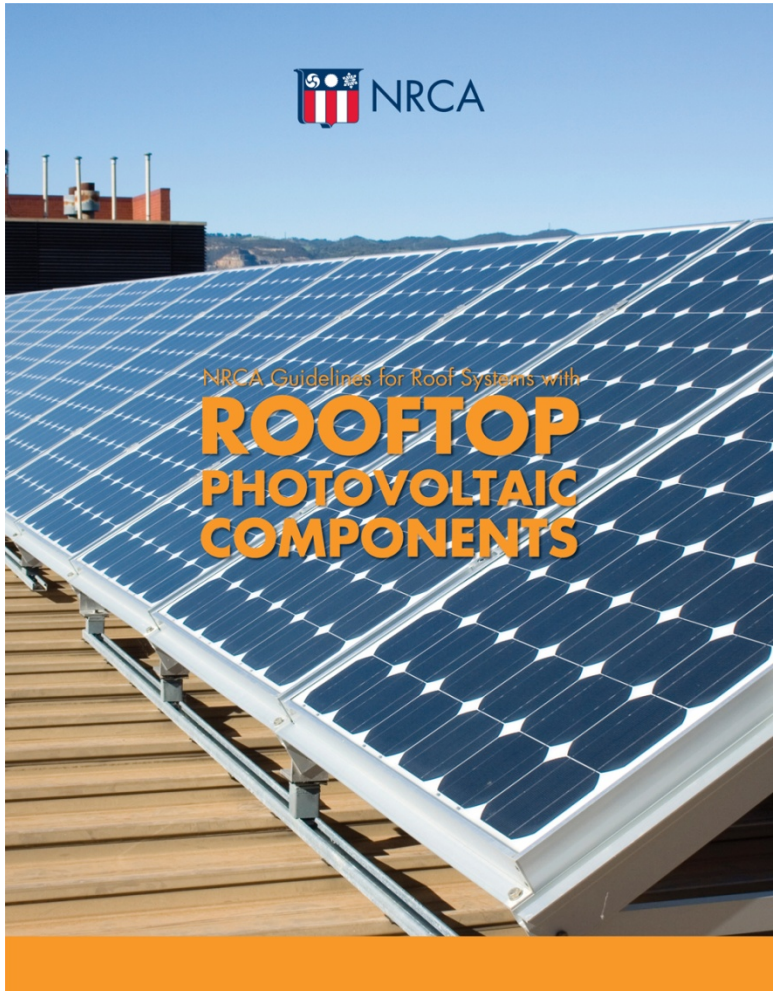
Minneapolis, MN

Updated Manual



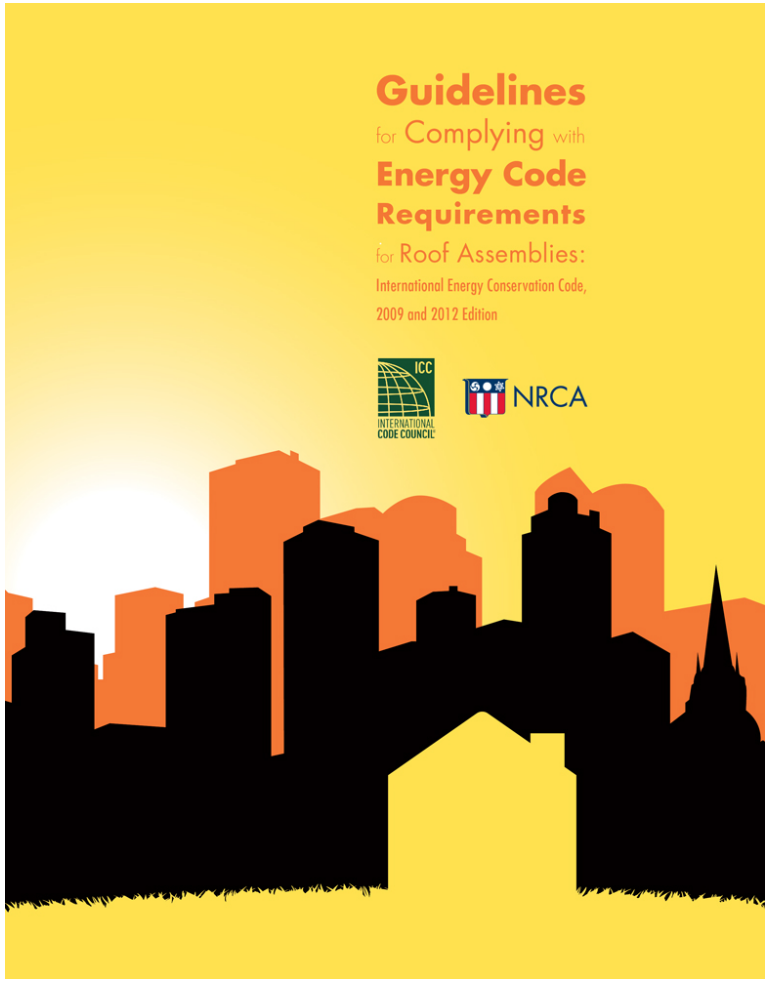
- Steep-slope Roof Systems—2013:
  - Metal shingles section added
  - Roof System Configurations added
  - Roof Re-covering added
  - New tile details
- The NRCA Roofing Manual:
  - 2010: Architectural Metal Flashings, Condensation Control and Reroofing
  - 2011: Membrane Roof Systems
  - 2012: Metal Panels and SPF Roof Systems
  - 2013: Steep-slope Roof Systems

Updated PV Guidelines



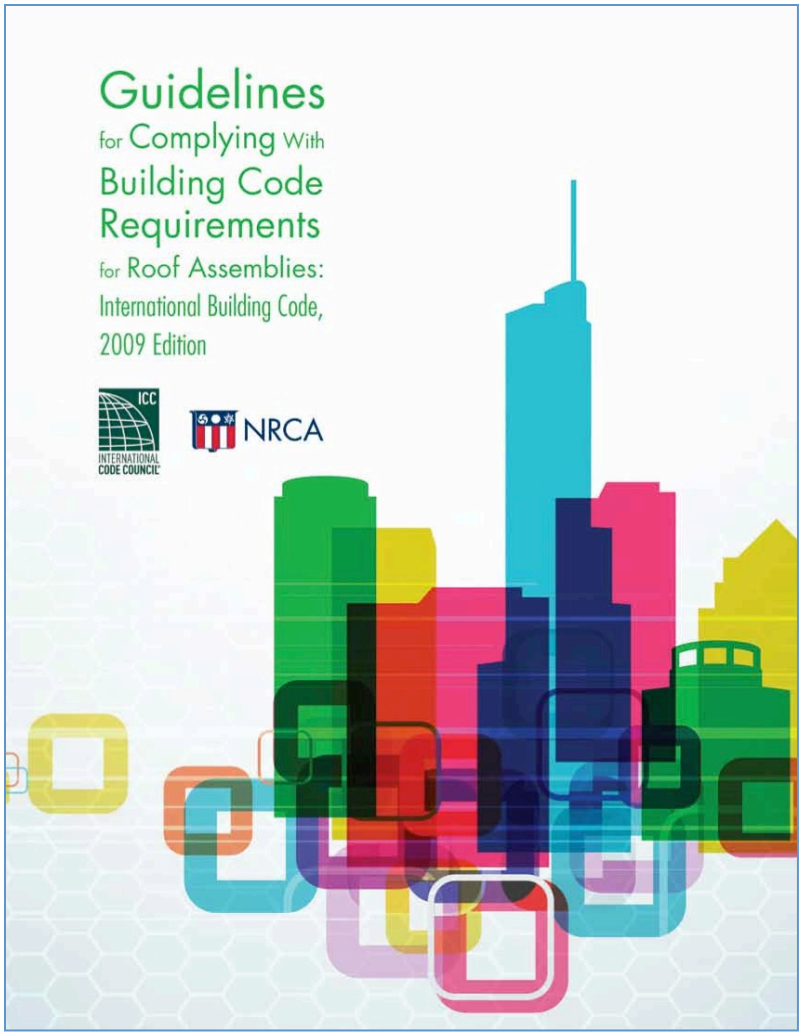
- Format:
  - Ch. 1-PV Fundamentals
  - Ch. 2-Standards and Codes
  - Ch. 3-Roof-mounted applications
- Extensive information on code requirements specific to rooftop applications
- Roof flashing details

Energy Codes Manual



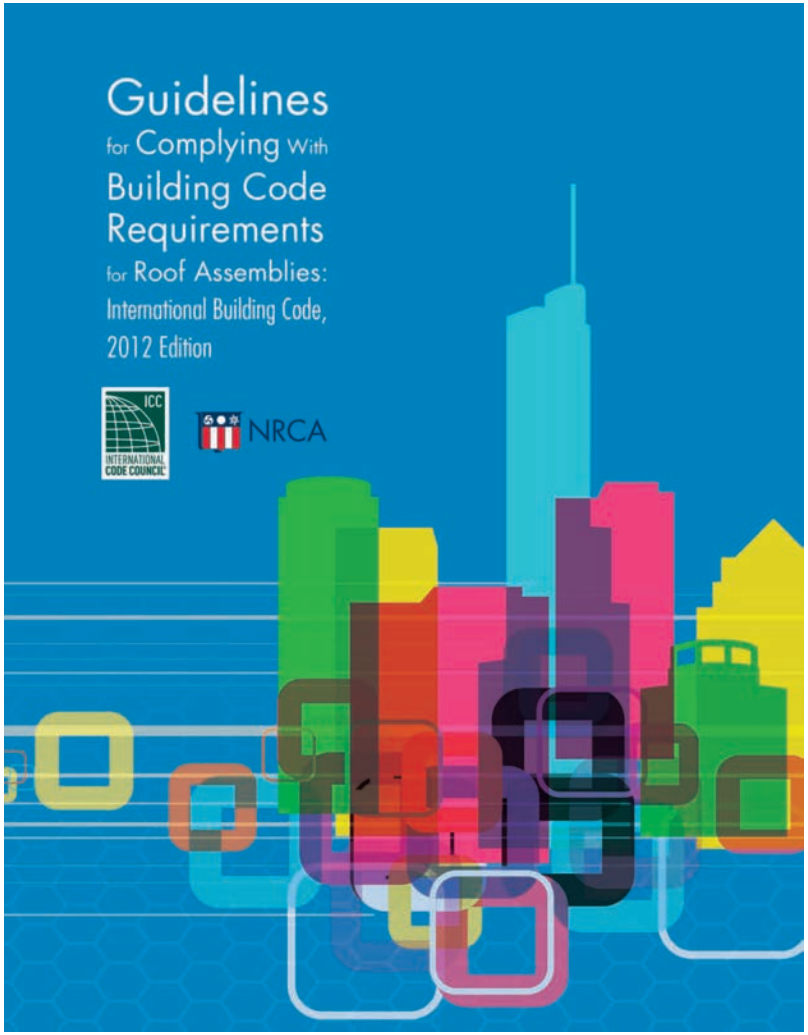
- Based upon IECC 2012 with ASHRAE 90.1-07 option and IECC 2012 with ASHRAE 90.1-10 option
- Includes roofing-related code text and NRCA commentary on each section
- Appendix has county-specific prescriptive R-value tables
- Co-branded with ICC; NRCA promotes to industry and ICC promotes to code officials

Building Codes Manual (2009 Codes)



- Based on 2009 I-codes:
  - IBC 2009
  - IRC 2009
  - IECC 2009
  - IPC 2009
  - IFC 2009
- Includes roofing-related code text and NRCA commentary on each section
- Co-branded with ICC; NRCA promotes to industry and ICC promotes to code officials

Building Codes Manual (2012 Codes)



- Based on 2012 I-codes:
  - IBC 2012
  - IRC 2012
  - IECC 2012
  - IPC 2012
  - IFC 2012
- Includes roofing-related code text and NRCA commentary on each section
- Co-branded with ICC; NRCA promotes to industry and ICC promotes to code officials
- Available in March 2013

NRCA Technical Operations Committee: Technical Programs and Issues

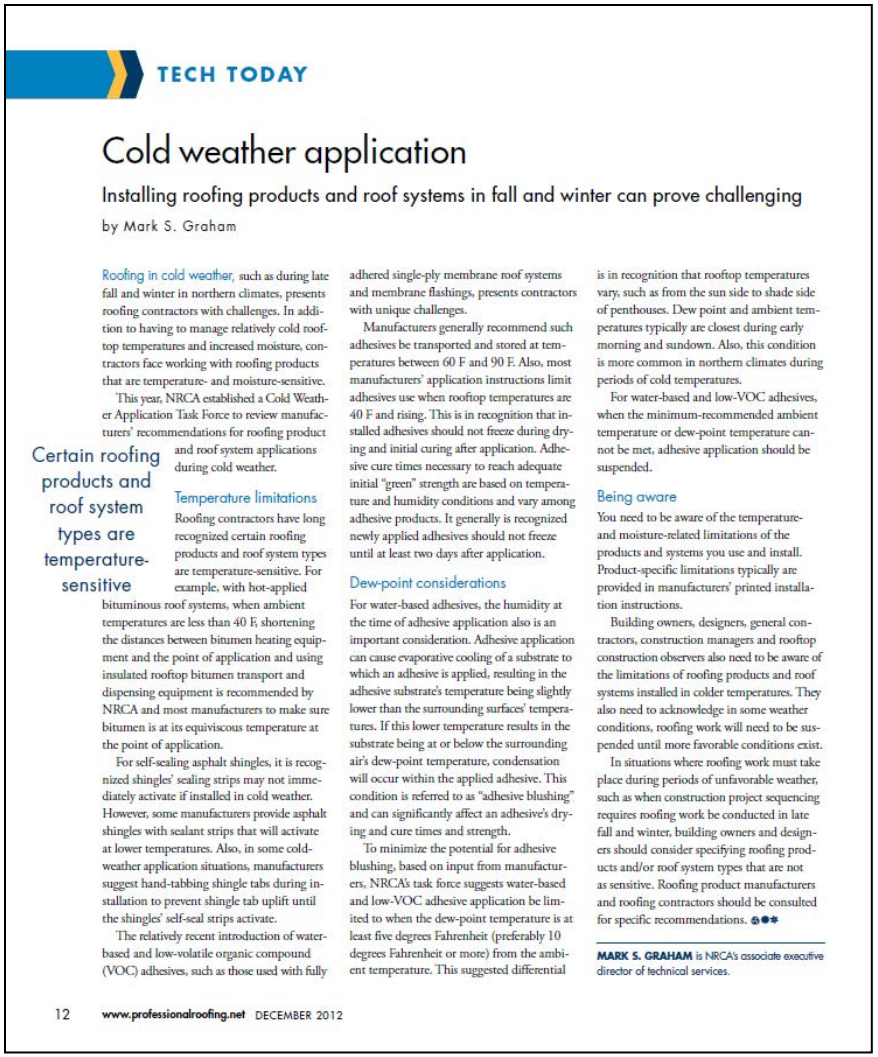
Dane Bradford

President

Bradford Roof Management

Billings, MT

Cold-weather application



TECH TODAY

Cold weather application

Installing roofing products and roof systems in fall and winter can prove challenging

by Mark S. Graham

Roofing in cold weather, such as during late fall and winter in northern climates, presents roofing contractors with challenges. In addition to having to manage relatively cold rooftop temperatures and increased moisture, contractors face working with roofing products that are temperature- and moisture-sensitive.

This year, NRCA established a Cold Weather Application Task Force to review manufacturers' recommendations for roofing product and roof system applications during cold weather.

Certain roofing products and roof system types are temperature-sensitive

Temperature limitations

Roofing contractors have long recognized certain roofing products and roof system types are temperature-sensitive. For example, with hot-applied bituminous roof systems, when ambient temperatures are less than 40 F, shortening the distances between bitumen heating equipment and the point of application and using insulated rooftop bitumen transport and dispensing equipment is recommended by NRCA and most manufacturers to make sure bitumen is at its equiviscous temperature at the point of application.

For self-sealing asphalt shingles, it is recognized shingles' sealing strips may not immediately activate if installed in cold weather. However, some manufacturers provide asphalt shingles with sealant strips that will activate at lower temperatures. Also, in some cold-weather application situations, manufacturers suggest hand-tabbing shingle tabs during installation to prevent shingle tab uplift until the shingles' self-seal strips activate.

The relatively recent introduction of water-based and low-volatile organic compound (VOC) adhesives, such as those used with fully adhered single-ply membrane roof systems and membrane flashings, presents contractors with unique challenges.

Manufacturers generally recommend such adhesives be transported and stored at temperatures between 60 F and 90 F. Also, most manufacturers' application instructions limit adhesives use when rooftop temperatures are 40 F and rising. This is in recognition that installed adhesives should not freeze during drying and initial curing after application. Adhesive cure times necessary to reach adequate initial "green" strength are based on temperature and humidity conditions and vary among adhesive products. It generally is recognized newly applied adhesives should not freeze until at least two days after application.

Dew-point considerations

For water-based adhesives, the humidity at the time of adhesive application also is an important consideration. Adhesive application can cause evaporative cooling of a substrate to which an adhesive is applied, resulting in the adhesive substrate's temperature being slightly lower than the surrounding surfaces' temperatures. If this lower temperature results in the substrate being at or below the surrounding air's dew-point temperature, condensation will occur within the applied adhesive. This condition is referred to as "adhesive blushing" and can significantly affect an adhesive's drying and cure times and strength.

To minimize the potential for adhesive blushing, based on input from manufacturers, NRCA's task force suggests water-based and low-VOC adhesive application be limited to when the dew-point temperature is at least five degrees Fahrenheit (preferably 10 degrees Fahrenheit or more) from the ambient temperature. This suggested differential is in recognition that rooftop temperatures vary, such as from the sun side to shade side of penthouses. Dew point and ambient temperatures typically are closest during early morning and sundown. Also, this condition is more common in northern climates during periods of cold temperatures.

For water-based and low-VOC adhesives, when the minimum-recommended ambient temperature or dew-point temperature cannot be met, adhesive application should be suspended.

Being aware

You need to be aware of the temperature- and moisture-related limitations of the products and systems you use and install. Product-specific limitations typically are provided in manufacturers' printed installation instructions.

Building owners, designers, general contractors, construction managers and rooftop construction observers also need to be aware of the limitations of roofing products and roof systems installed in colder temperatures. They also need to acknowledge in some weather conditions, roofing work will need to be suspended until more favorable conditions exist.

In situations where roofing work must take place during periods of unfavorable weather, such as when construction project sequencing requires roofing work be conducted in late fall and winter, building owners and designers should consider specifying roofing products and/or roof system types that are not as sensitive. Roofing product manufacturers and roofing contractors should be consulted for specific recommendations.

MARK S. GRAHAM is NRCA's associate executive director of technical services.

12 www.professionalroofing.net DECEMBER 2012

Professional Roofing, December 2012

- Largely driven by LVOC and water-based adhesives issue
- NRCA task force met with manufacturers
- Interim recommendations:
  - Storage: 60-90 F
  - Application: 40 F and rising, and no freezing during curing (2+ days)
  - Dew point vs. ambient temperature
- Work closely with manufacturers

NRCA Technical Operations Committee: Technical Programs and Issues

Mark S. Graham

Associate Executive Director, Technical Services

National Roofing Contractors Association

Rosemont, IL

FM Approvals' revision of FM 4470

- FM 4470 provides the basis for FM's classification of roof assemblies (e.g., 1-60, 1-90)
- Previous edition dated 1992 (April 1986)
- New edition published in June 2012 with an effective date of January 1, 2013

Code requirements

IBC 2006 and previous editions

1504.3.1 Other roof systems. Roof systems with built-up, modified bitumen, fully adhered or mechanically attached single ply, through fastened metal panels and other types of membrane roof coverings shall also be tested in accordance with FM 4450, FM 4470, UL 580 or UL 1897

Code requirements

IBC 2009 and IBC 2012

1504.3.1 Other roof systems. Roof systems with built-up, modified bitumen, fully adhered or mechanically attached single ply, through fastened metal panels and other types of membrane roof coverings shall also be tested in accordance with FM 4474, UL 580 or UL 1897

Revisions to FM 4470

June 2012

- Adds NFPA 276
- Changes conditions of acceptance for wind uplift and hail damage resistance testing
- Adds alternative test methods for fastener corrosion resistance
- Changes to methods on how steel roof decks are evaluated
- Adds optional tests for dynamic puncture resistance, noncombustible core insulation and solar reflectance

Revisions to FM 4470

Evaluation of steel roof decks

- Allowable stresses per AISI S100
- Deflection based upon 200 lb. point load
- Deck design based upon 0.7-mm-thick (< 22 ga.)
- Fasteners tested for “pull over” of the deck material
- Stress calcs. on decks and fastener heads; lower value controls

Effective date

FM 4470, Section 1.6

- Effective date is December 31, 2012
- "…Products FM Approved under a previous edition shall comply with the new version by the effective date or else forfeit Approval…"

So, what does all this mean?

- FM has re-evaluated pre-12/31/12 classifications:
  - Reduce deck span, increase deck thickness and/or grade (33 ksi to 80 ksi) to maintain wind rating and existing RoofNav number
  - Re-evaluate assemblies, lower wind rating and create a new RoofNav number
- FM classifications likely have changed

Deck span limitations

22 ga. wide rib deck, spanning 6 ft. with fully-adhered roof membranes:

- 33 ksi deck limited to Class 1-165
- 80 ksi deck limited to Class 1-300

Mechanically-attached roof membranes have varying ratings based upon row spacing

An example

Sika Sarnafil Roofing Technical Bulletin #08-12, dated December 19, 2012

System description:

S327 membrane, 9'6" row spacing, attached with XP/XPN fasteners at 6" o.c. to 22 ga. steel roof deck

Pre-12/31/12 wind rating:

120 psf

New wind ratings:

- 90 psf using 80 ksi steel deck
- 90 psf using 22 ga., 33 ksi steel deck and 6' membrane row spacing

Suggestions

- Be careful!
- Work closely with manufacturers
- For current projects, notify and seek clarification from A/E/C, GC/CMs and/or building owners.

Professional Roofing, Jan. 2013

TECH TODAY

Changes reduce some FM classifications

FM 4470 has been revised, resulting in different uplift resistance criteria

by Mark S. Graham

FM Approvals has revised its criteria for determining the uplift resistances of membrane and liquid-applied roof assemblies. Because many roofing professionals rely on FM Approvals' classifications when designing and specifying low-slope roof assemblies, you should be aware of the changes made and their effects on specific roof assembly classifications.

FM 4470

FM 4470, "Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction," is the basis for FM Approvals' determination of 1-60, 1-90, 1-120, etc., classifications used for low-slope membrane and liquid-applied roof assemblies.

In June 2012, FM Approvals revised FM 4470; the effective date of the new standard was Dec. 31, 2012. The revisions include adding NFPA 276, "Standard Method for Fire Tests for Determining the Heat Release Rate of Roofing Assemblies with Combustible Above-Deck Roofing Components," to determine combustibility below the roof deck; changes to the conditions of acceptance for wind uplift and hail damage resistance testing and adding an alternative test method for determining fasteners' corrosion resistances.

One of the more significant changes to FM 4470 is how steel roof decks are evaluated. With the revised standard, steel roof decks cannot exceed the allowable stresses provided for in AISI S100, "North American Specification for the Design of Cold-Formed Steel Structural Members." The maximum allowable deflection for steel roof decks is based on a 200-pound point load; previously, a 300-pound point load was used. Also, minimum designs of steel roof decks now are based on a minimum 0.7-mm-thick (slightly less than 22-gauge), 33-ksi yield strength steel. Previously, minimum 0.75-mm-thick (22-gauge) steel complying with the ASTM International specification was used for evaluation.

The method of analyzing attachment of steel decks also has been revised. Deck fasteners now are tested for fastener "pull over" (pull through) of the deck material. Also, stress calculations are performed on both steel decks and fastener heads, and the lower of the two values is used as the basis for classification.

FM 4470 also now includes additional provisions allowing for optional ratings for dynamic puncture resistance of roof coverings, noncombustible core for roof insulation and solar reflectance of roof surfaces.

All products tested after Dec. 31, 2012, are required to satisfy the new standard's requirements. Products FM Approvals already approved under previous editions of FM 4470 also need to comply with the current edition by the effective date or forfeit classification.

What this means

If a specific classified assembly results in an overstressed steel roof deck, FM Approvals has, upon consultation with the manufacturer, either changed the assembly's parameters to compensate for the deck overstress or reduced the assembly's wind rating to a level where the deck no longer is overstressed. Assembly parameters likely changed include reducing the deck span and/or increasing the deck's steel thickness and/or yield strength (from 33 ksi to 80 ksi).

For assemblies where the wind rating has been reduced, the assemblies' previous RoofNav numbers have been withdrawn and new RoofNav numbers issued to avoid confusion.

If you use the new version of FM 4470 for an adhered roof assembly applied to a 1½-inch-thick, 22-gauge steel deck at a 6-foot maximum span, FM Approvals has indicated maximum classifications are limited to 1-165 when using a 33-ksi steel deck and 1-300 when using an 80-ksi steel deck. For seam-fastened mechanically attached single-ply membrane assemblies, classifications will vary based on assembly parameters and seam fastener row spacing, but generally classifications will be noticeably lower than with FM 4470's previous version.

> All products tested after Dec. 31, 2012, are required to satisfy the new standard's requirements

Proceed cautiously

Roof system designers and specifiers need to be aware of FM 4470's revision and its effect on assembly parameters, uplift ratings and RoofNav numbers for membrane and liquid-applied roof assemblies using steel roof decks.

For roofing projects designed before the implementation date but that will be installed after the implementation date, clarification needs to be sought regarding which version of FM 4470 applies. If the current version applies, changes to the roof assembly specification may be necessary and affect a project's cost.

I encourage roof system designers and specifiers and roofing contractors to work closely with manufacturers when determining changes to specific assembly parameters, uplift ratings and RoofNav numbers.

MARK S. GRAHAM is NRCA's associate executive director of technical services.

New requirements for air barriers

International Energy Conservation Code, 2012 Edition (Climate Zones 4-8)

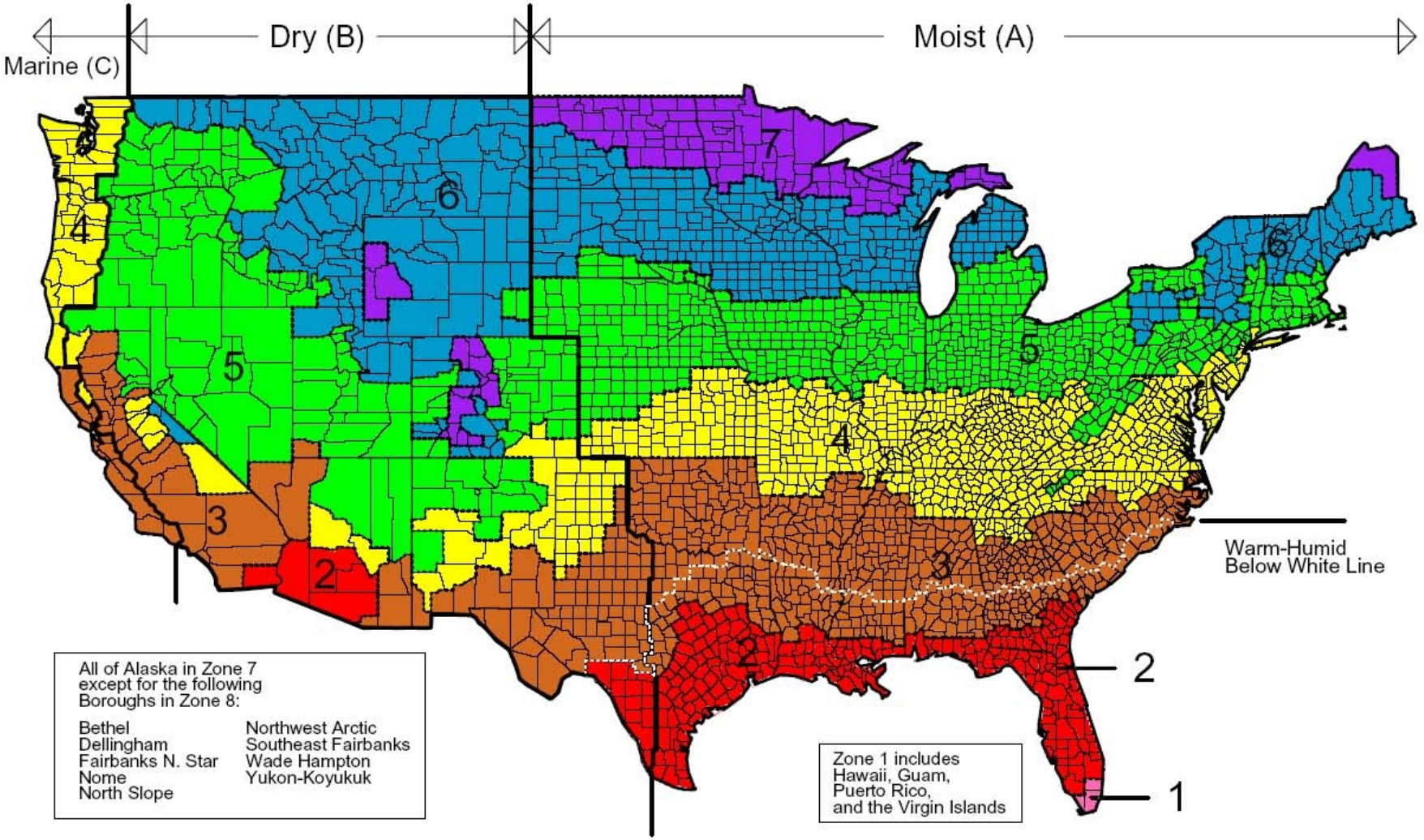
- ASHRAE 90.1-10 alternative (All Climate Zones)

International Green Construction Code, 2012 Edition (All Climate Zones)

- ASHRAE 189.1-09 alternative (All Climate Zones)

Climate zones

IECC 2012, Section C301—Climate Zones



IECC 2012

Sec. C402.2-Air leakage (Mandatory)

- Materials:
  - 0.004 cfm/ft^3 (0.02 L/s·m^2) at 0.3 inches water gauge (75 Pa) using ASTM E2178
  - Deemed to comply options
- Assemblies:
  - 0.04 cfm/ft^3 (0.2 L/s·m^2) at 0.3 inches water gauge (75 Pa) using ASTM E2357, ASTM E1677 or ASTM E283
- Whole buildings:
  - 0.40 cfm/ft^3 (2.0 L/s·m^2) at 0.3 inches water gauge (75 Pa) using ASTM E779

IECC 2012

Sec. C402.4.1.2.1-Materials

Deemed to comply options (roofing specific):

- SPF (closed cell), min. 1.5 pcf, min. 1½-inches thick
- Built up roof membrane
- Modified bituminous roof membrane
- Fully adhered single-ply roof membrane

Roof systems requiring testing

- Mechanically-attached single-ply membranes
- Ballasted single-ply membranes
- Metal panels
- Steep-slope:
  - Asphalt shingles
  - Tile
  - Slate
  - Wood

Survey of roof system manufacturers

Preliminary conclusions

- New air barrier requirements applicable to "commercial" buildings
- Compliance may be a challenge
- Compliance may dictate roof system choices and detailing
- How will compliance be documented?
- Additional research and information is needed

Interim recommendations

- Verify if IECC 2012 (or other requirements) is applicable
- The deemed to comply options provide some guidance for roof system selection.
- Details (transitions, joints, penetrations) are critical to performance
- Request for information
- Work closely with manufacturers
- Work closely with building officials

Professional Roofing, July 2012

TECH TODAY

Air barriers and the new energy code

IECC 2012's air barrier requirements could limit design options

by Mark S. Graham

The *International Energy Conservation Code,* 2012 Edition* (IECC 2012) includes a new requirement intended to limit air leakage through buildings' thermal envelopes, including roof assemblies. The requirement, a change from IECC 2009, will significantly affect the design and installation of certain roof assemblies.

IECC 2012

IECC 2012 Section C402.4—Air Leakage (Mandatory) requires all commercial (nonresidential) buildings, except those in climate zones 1 through 3, to include a continuous air barrier. Climate zones 1 through 3 include Alabama, Florida, Hawaii, Louisiana, Mississippi and South Carolina and portions of Arizona, Arkansas, California, Georgia, Nevada, New Mexico, North Carolina, Oklahoma, Tennessee, Texas and Utah.

The required air barrier is permitted to be located on the inside or outside of the building envelope, located within assemblies composing the building envelope and any combination thereof. The air barrier is required to be across all joints and assemblies comprising the building envelope. Air barrier joints and seams need to be sealed, including sealing transitions and changes in materials. Special provisions are provided for sealing recessed lighting fixtures, air barrier penetrations, doors and access openings, and outdoor air intakes and exhausts.

IECC 2012 provides for three compliance options for air barrier selection and evaluation: materials, assemblies or whole building testing. Using IECC 2012's materials option, a material with an air permeability no greater than 0.004 cfm/ft² under a pressure differential of 0.3 inches water gauge tested according to ASTM D2178, "Standard Test Method for Air Permeance of Building Materials," complies. Also, a number of specific materials—including minimum ⅜-inch-thick plywood or oriented strand board; minimum ½-inch-thick extruded polystyrene or foil-faced polyisocyanurate insulation or gypsum or cement board; cast-in-place and precast concrete; and built-up, polymer-modified bitumen and fully adhered single-ply membranes—are deemed to comply provided their joints are sealed and materials are installed as air barriers according to manufacturers' instructions.

ON *the* WEB

To see IECC 2012's climate zone map and obtain IECC 2012, log on to www.professionalroofing.net.

The assemblies option allows assemblies of materials to comply with an average air leakage not to exceed 0.04 cfm/ft² under a pressure differential of 0.3 inches of water gauge when tested according to ASTM E2357, "Standard Test Method for Determining the Air Leakage of Air Barrier Assemblies"; ASTM E1677, "Standard Specification for Air Barrier (AB) Material or System for Low-Rise Framed Building Walls"; or ASTM 283, "Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen."

The whole building option requires complete buildings be tested and the resulting air leakage rate not exceed 0.4 cfm/ft² under a pressure differential of 0.3 inches of water gauge when tested according to ASTM E7979, "Standard Test Method for Determining Air Leakage Rate by Fan Pressurization."

Considerations

Although certain roof system types, including built-up, polymer-modified bitumen and adhered single-ply membranes are considered deemed to comply with the new air barrier requirement, other roof system types will require additional testing to substantiate compliance. These include mechanically attached and ballasted single-ply membranes, metal panels and shingle-type roof coverings.

Did you KNOW?

More information about roofing-related requirements contained in IECC 2012 is available in *Guidelines for Complying with Energy Code Requirements for Roof Assemblies: International Energy Conservation Code 2009 and 2012 Editions.* To purchase the manual, go to shop.nrca.net.

For some of these roof system types, it may be more practical to provide the necessary air barrier at or below the roof deck level by using a cast-in-place or precast concrete roof deck, spray foam below the roof deck or a gypsum board ceiling. IECC 2012 includes specific density and thickness requirements for closed and open-cell spray foam for it to be considered deemed to comply.

I recommend designers consult roof system manufacturers regarding how their specific roof system configurations function as air barriers according to IECC 2012's requirements. Also, roof system manufacturers should be consulted for specific penetration and perimeter sealing instructions to comply with IECC 2012's requirements.

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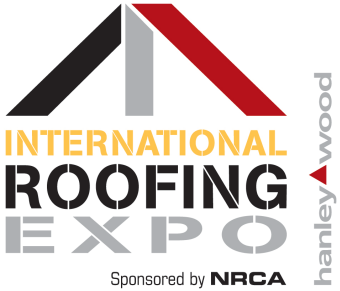

Change is in the air:

Air barrier requirements for roof assemblies

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