BOCA's code changes affect the industry

BOCA's changes to its 1999 model building code focus on asphalt shingles and reroofing

by **Mark S. Graham**

The Building Officials and Code Administrators International Inc. (BOCA) has published an updated edition of its model building code. The 1999 edition contains revisions approved by BOCA's membership during the organization's 1997 and 1998 code development cycles and updates the code's previous edition, which was published in 1996.

A number of the revisions incorporated into *The BOCA National Building Code/1999* (BNBC/1999) have directly affected the design, application and use of various roof systems.

Model codes

BOCA is one of three model code groups in the United States that publish model building codes. The others are Southern Building Code Congress International (SBCCI), which publishes the *Standard Building Code*, and International Conference of Building Officials (ICBO), which publishes the *Uniform Building Code*.

BOCA, SBCCI and ICBO develop model building codes for adoption by local (e.g., city) and regional (e.g., county, state) governments. These jurisdictions make codes into law by enacting ordinances. The government body that enacts a code ordinance can enforce compliance of the code it adopts. Model code groups have no authority to enforce compliance with their model codes.

BOCA's model code generally is adopted by jurisdictions in the Midwest, Mid-Atlantic and Northeast regions of the United States. Some jurisdictions within these general areas adopt building codes other than BOCA's; conversely, BOCA's code sometimes applies in jurisdictions outside these regions.

Following is a brief summary of the roofing-related changes incorporated into BNBC/1999 with which roofing professionals should become familiar.

Underlayments

In BOCA's 1996 code edition, the requirements for underlayments for steep-slope roof assemblies were included in a general requirements section, Section 1507.1, which applies to all roof assemblies. For BNBC/1999, the language regarding underlayments now is in Section 1507.4, which specifically addresses general requirements for steep-slope roof coverings.

Although this is not a change in the requirements for underlayments, it clarifies that the requirements apply specifically to steep-slope roof assemblies and not other roof assemblies (i.e., low-slope roof assemblies).

Asphalt shingles

In BNBC's 1996 edition and most other building codes, an exception regarding wind resistance was granted for asphalt shingles. In the 1996 edition, BOCA exempted asphalt shingles from its code's wind-resistance requirements. Instead, prescriptive fastening requirements (e.g., four fasteners per strip shingle) were included in an attempt to adequately address wind resistance. This exception was granted only for asphalt shingles; most other roof coverings had to comply with BOCA's wind-load requirements.

In BNBC/1999, the exception that allows using prescriptive fastening requirements for asphalt shingles has been removed from Section 1505.3. As a result, asphalt shingle roof systems now must be designed to satisfy BNBC/1999's wind-load requirements. These requirements include consideration of basic wind speed (i.e., 70 mph to 110 mph [31 m/s to 49 m/s]) adjusted for building height above grade; building exposure; wind-gust effect; and wind-importance factor, as prescribed in Sections 1505.3 and 1609.3 of BNBC/1999.

Asphalt shingle fasteners

Another change from the 1996 edition to the 1999 edition involves asphalt shingle fasteners. In BNBC/1996 and most other building codes, fasteners used to attach asphalt shingles to substrates were not specified. As a result, it often had been interpreted that either roofing nails or staples were acceptable fasteners for asphalt shingles.

In BNBC/1999, there now is language specifically requiring the use

of roofing nails, and not roofing staples, to attach asphalt shingles. Section 1507.3.1 of the code reads: "Fasteners for asphalt shingles shall be galvanized, aluminum or stainless-steel roofing nails, minimum 12-gauge [0.105-inch (2.67-mm)] shank with a minimum ⅜-inch (10-mm) diameter head, of a length to penetrate through the roofing materials and a minimum ¾ inch (19 mm) into the roof sheathing. Where the roof sheathing is less than ¾-inch (19-mm) thick, the nails shall penetrate through the sheathing."

The change clarifies the code's intent and makes its requirements consistent with what is understood as good roofing practice. Using roofing nails instead of staples is recommended in *The NRCA Roofing and Waterproofing Manual* and the Asphalt Roofing Manufacturers Association's *Residential Asphalt Roofing Manual.*

Attic ventilation

In BOCA's 1996 code edition, ventilation requirements for roof spaces (e.g., attics) were reformatted from those in previous BNBC editions to clarify the requirements' intents. Requirements were added that stated attic ventilation openings (e.g., ridge vents, louvers) be tested and shown not to allow rain or snow infiltration when tested. Also, a provision was added to the code that ventilation openings not be present in roof areas subject to snow drift.

In BNBC/1999's Section 1210.1, ventilation requirements are revised from the previous edition—the requirement for testing ventilation openings has been changed to read "... designed and installed to prevent rain and snow infiltration." The following language also was added: "Where ridge or gable vents are utilized ... balancing the area of vents in the ridges and in the eaves such that at least one-half of the ventilation area shall be provided by soffit and eave vents ... ."

Do asphalt shingles comply?

During recent years, asphalt shingle requirements have changed significantly in the model building codes (i.e., *Uniform Building Code* [UBC], *Standard Building Code* [SBC] and *The BOCA* [Building Officials and Code Administrators International Inc.] *National Building Code* [BNBC]). The changes raise questions about whether asphalt shingle roof systems can be designed and installed to comply with current model building codes.

Material standards

BNBC's 1999, 1996 and 1993 editions and SBC's 1999 and 1997 editions require glass-fiber-reinforced asphalt shingles to comply with ASTM Standard D 3462, "Standard Specification for Asphalt Shingles Made from Glass Fiber and Surfaced with Mineral Granules." Compliance with ASTM D 3462 also is required in ICBO ES AC 127, "Acceptance Criteria for Roofing Systems with Asphalt Shingles Made with Glass Felt," which are the acceptance criteria for glass-fiber-reinforced asphalt shingles to comply with UBC's 1997 edition.

Many glass-fiber-reinforced asphalt shingles currently on the market do not comply with ASTM D 3462. Readers should refer to "Concern with fiberglass shingles," July 1998 issue, page 44, for additional information regarding glass-fiber-reinforced asphalt shingle manufacturers' compliance with ASTM D 3462.

Wind resistance

In BNBC's and SBC's 1999 editions, the provisions allowing prescriptive fastening requirements (e.g., four fasteners per strip shingle) to satisfy wind-resistance requirements have been removed. As a result, asphalt shingles now must be designed to resist the wind-load requirements derived from specific codes.

Because the design rationale and data to substantiate asphalt shingles' wind resistances to the code-prescribed uplift pressures do not exist publicly, it is unclear whether asphalt shingles currently on the market and shingle manufacturers' fastening instructions comply with the codes' intents.

Roofing professionals should refer to "Wind resistance of asphalt shingles," June issue, page 56, for more information about asphalt shingles' wind resistances.

Recommendations

Because asphalt shingles' compliance with current model building codes is unclear, roofing professionals are urged to exercise caution when designing, purchasing and installing asphalt shingle roof systems.

Roof system designers and installers should work closely with their material distributors and/or asphalt shingle manufacturers to obtain asphalt shingle products and installation instructions that comply with applicable building codes.

In addition, roofing professionals can ask their material distributors and/or asphalt shingle manufacturers to certify compliance with applicable codes. Also, hold-harmless language may be added in purchase orders or contracts in which roofing professionals specify or purchase asphalt shingles.

Reroofing

With previous BNBC editions, it sometimes was interpreted for roof removal situations (i.e., tear-offs) that the code did not require all layers of existing roof covering to be removed before a new roof covering was installed. In certain situations, it was interpreted that removal of only the topmost roof covering was necessary, and a new roof covering would be installed over the existing underlying layers.

In BNBC/1999, language has been added to Section 1512.3 that clarifies roof removal situations. The code now states that "all existing layers of roof coverings" must be removed. Also, the section has been revised to clarify that roof removal is necessary where any one of three prescribed conditions apply: "wet roof; existing wood shake, slate, clay, cement or asbestos-cement tile roof; or two or more existing roofs."

BNBC/1999 adoption

Jurisdictions that currently use BOCA's code likely will begin adopting BNBC/1999 during the coming months. In fact, several jurisdictions already have begun the process of adopting this latest edition.

Because BNBC/1999 contains significant revisions affecting roof systems, particularly asphalt shingles and reroofing, roofing professionals in regions using BOCA's code are encouraged to know whether and when their local jurisdictions intend to adopt BNBC/1999. The author suggests roofing professionals contact their jurisdictions' code-enforcement entities to determine specific code applicability and future adoption plans.

Also, roofing professionals in regions that use BOCA's code should be careful when preparing designs, bids and proposals that may be affected by these code changes. In some instances, roofing projects may be designed and bid while a previous edition of the code is applicable and constructed after the new edition is adopted.

Editor's note: *BNBC/1999, its previous editions and other BOCA codes can be purchased from BOCA at 4051 W. Flossmoor Road, Country Club Hills, IL 60478-5795; telephone (708) 799-2300. Its Web site is www.bocai.org.*

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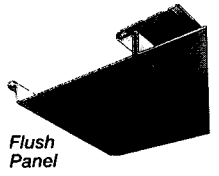
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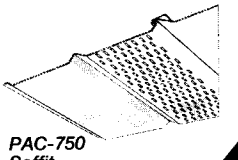
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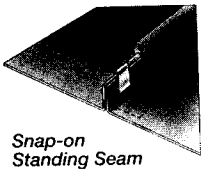
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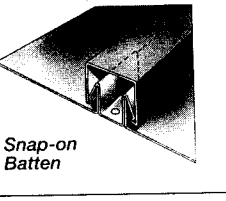
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