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# COMPENDIUM

OF

# CHANGES

by Mark S. Graham

Updates to the I-Codes will affect roof system design and installation



**D**uring the past several months, the International Code Council® has updated its model codes,

commonly referred to as the I-Codes. Because the I-Codes serve as the technical basis for most state, county and parish, and local jurisdictions' codes, publication of new, revised and updated editions can affect roof system designs and applications. As jurisdictions begin the processes of updating their codes, you should be aware of the roofing-related changes incorporated into the 2021 I-Codes.

This month, I will address significant roofing-related changes to the 2021 editions of the International Building Code,® International Existing Building Code® and International Fire Code.® In the September issue, I will address the roofing-related changes to the International Energy Conservation Code,® International Residential Code,® and International Plumbing Code.®

### Code development process

The 2021 editions of the I-Codes present the codes as originally issued in 2000 with changes reflected in the 2003 through 2018 editions and further changes approved by ICC's subsequent code development process through 2019.

For the 2021 I-Codes, ICC's code development process occurred in two groups: Group A and Group B. Eleven code development committees from the two groups met during a span of two years to review the code change proposals and make recommendations for consideration by ICC membership. Final consideration of the code change proposals from each group occurred at ICC's annual conference where ICC code official members voted to approve the committees' recommendations and considered the individual code change proposals. ICC also has an online voting procedure where members who did

not attend the annual conference could submit their votes.

In the 2021 I-Codes, solid vertical lines in the margins within the body of the code indicate technical changes from the 2018 edition. A bold arrow in the margins indicates where an entire section, paragraph, exception or table has been deleted or an item in a list of items or a row of a table has been deleted.

A single asterisk placed in the margin indicates text or a table has been relocated. A double asterisk placed in the margin indicates the text or table immediately following it has been relocated there from elsewhere in the code.

### IBC 2021

IBC 2021 was published Oct. 23, 2020. Most of the roofing-related provisions in IBC 2021 are contained in Chapter 15-Roof Assemblies and Rooftop Structures.

In Section 1503.3-Parapet Walls, new language has been added clarifying parapet walls shall be coped or covered with weatherproof materials of a width not less than the thickness of the parapet wall. For fire-resistance-rated parapet walls, the weatherproof materials must ensure the fire-resistance rating of the wall is not decreased. This revision is intended to permit fire-classified roof coverings to be used for coping fire-resistance-rated parapet walls.

In Section 1504.6-Edge Systems for Low-slope Roofs, the requirement for ANSI/SPRI ES-1 testing of metal edge systems has been expanded to include all built-up, polymer-modified bitumen and single-ply roof systems having slopes less than 2:12. Previously, the code's ES-1 requirement only applied where the edge metal secured the edges of roof membranes.

A further clarification in this section indicates metal counterflashings are outside the scope of the code's ES-1 testing requirement.

## THE ICC FAMILY OF CODES

The ICC family of model codes, commonly referred to as the “I-Codes,” is a complete set of complementary documents that provides users with full integration and coordination of technical provisions. Individual codes also can be used in subsets or as stand-alone documents. So that each individual code is as complete as possible, some technical provisions that are relevant to more than one

subject area are duplicated in some of the model codes. For example, the provisions for reroofing contained in Section 1512-Reroofing of IBC 2021 are also contained in Section 705-Reroofing of IEBC 2021. This allows jurisdictions flexibility in their application of the I-Codes.

The 14 model codes comprising the I-Codes are as follows:

Section 1504.6.1-Gutter Securement for Low-slope Roofs adds a requirement for gutters to be tested for wind resistance according to ANSI/SPRI GT-1’s Test Methods G-1 and G-2 on built-up, polymer-modified bitumen and single-ply roof systems having slopes less than 2:12 where a gutter is used to secure the edge of the roof membrane.

Section 1504.9-Wind Resistance of Aggregate-surfaced Roofs provides new requirements for the use of aggregate surfacing on built-up and polymer-modified bitumen roof systems. A new table has been added, Table 1504.9-Minimum Required Parapet Height (inches) for Aggregate Surfaced Roofs, that prescribes minimum permitted parapet heights based on aggregate size by ASTM International designation, mean roof height, basic design wind speed and wind exposure.

Minimum parapet heights range from 2 inches to 56 inches (64 inches in Exposure D) depending on the building’s parameters. Where minimum parapet height is indicated as 2 inches, the table indicates a metal gravel stop is permitted and must extend no less than 2 inches from the roof surface and no less than the height of the aggregate.

Applicable to clay and concrete tile roof systems, in Section 1507.3-Clay and Concrete Tile, Sub-section 1507.3.1-Deck Requirements an exception has been added indicating spaced lumber sheathing shall be permitted in Seismic Design Categories A, B and C. In previous code editions, tile roofs were limited to solid sheathing roof decks.

Section 1507.12-Single-ply Roofing is new in IBC 2021 and combines two sections from previous code editions that addressed thermoset and thermoplastic single-ply roof systems separately. This revision is strictly a change in formatting; there are no technical changes to the requirements for single-ply membrane roof systems.

In Section 1507.14-Liquid-applied Roofing, ASTM International product standards for protective roof coatings have been moved to a new section specifically addressing protective roof coatings.

In Section 1507.16-Photovoltaic Shingles and Section 1507.17-Building-integrated Photovoltaic Roof Panels, UL 7103, “Outline of Investigation for Building-Integrated

Photovoltaic Roof Coverings,” or both UL 61730-1, “Standard for Photovoltaic (PV) Module Safety Qualification—Part 1: Requirements for Construction,” and UL 61730-2, “Photovoltaic (PV) Module Safety Qualification—Part 2: Requirements for Testing,” have been added as product standards and listing and labeling requirements. UL 1703 has been deleted from IBC 2021.

Section 1509-Roof Coatings is new to IBC 2021 and provides minimum requirements for protective roof coatings installed on a roof covering. Protective roof coatings must comply with one of the product standards listed in Table 1509.2-Roof Coating Materials Standards, the fire classification requirements in Section 1505-Fire Classification and manufacturers’ installation instructions. Table 1509.2 provides a list of ASTM International product standards for acrylic, aluminum-pigmented asphalt, asphalt, asphaltic emulsion, moisture-cured polyurethane and silicone roof coatings.

In Section 1512-Reroofing, a provision has been added in Section 1512.4-Reinstallation of Materials permitting existing aggregate, paver and lightweight interlocking paver ballast to be reused if not damaged, cracked or broken.

Chapter 12-Interior Environment includes requirements for attic ventilation in Section 1202-Ventilation. IBC 2021 includes a change in Section 1202.3-Unvented Attic and Unvented Enclosed Rafter Assemblies requiring the design and installation of a vapor diffusion port in unvented attics using air-permeable insulation in Climate Zones 1, 2 and 3. Such a vapor diffusion port is not required if air-impermeable insulation is used.

Chapter 16-Structural Design provides requirements for determining design wind loads applicable to buildings, including buildings’ roof assemblies. Section 1603-Construction Documents provides the code’s longstanding requirement for wind design data, including the basic design wind speed and design wind pressures, to be included in construction documents. With IBC 2021, a provision has been added requiring the design wind zones (field, perimeter and corners) be denoted and

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- International Private Sewage Disposal Code®
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- International Residential Code® for One- and Two-Family Dwellings
- International Swimming Pool and Spa Code®
- International Wildland-Urban Interface Code®
- International Zoning Code®

dimensioned in the construction documents. This should assist with better understanding of complex roof zones and the resulting additional attachment requirements.

## IEBC 2021

IEBC 2021 was published Dec. 28, 2020, and applies to the repair, alteration, change of occupancy, addition to and relocation of existing buildings. Its intent is to provide some degree of flexibility to permit the use of alternative approaches to achieve compliance with the code's minimum requirements.

Most of the roofing-related provisions in IEBC 2021 apply to reroofing and are contained in Chapter 7—Alterations—Level 1. IEBC's Level 1 alterations are described to include removal and replacement of existing materials that serve the same purpose as the original.

Section 705-Reroofing specifically addresses recovering and replacing existing roof systems. The requirements in Section 705 closely—nearly identically—match those of IBC 2021's Section 1512-Reroofing.

Section 706-Structural also provides specific building structural requirements when reroofing. Section 706.3.2 lists requirements for analyzing and, if necessary, strengthening a roof diaphragm's resistance (a roof deck's lateral resistance) to wind loads in high-wind regions where a reroofing permit is required. IEBC 2021 raises the threshold where analysis is required to an ultimate design wind speed greater than 130 mph. In IEBC 2018, that threshold was greater than 115 mph.

Also, for the same diaphragm requirement, IEBC 2021 adds an exception for buildings that have complied with the wind load provisions of ASCE 7-88, "Minimum Design Loads for Buildings and Other Structures," or later editions.

## IFC 2021

IFC 2021 was published Nov. 3, 2020, and establishes regulations relating to structures, processes, premises

and safeguards from the hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices. As an example, though the IBC or IEBC apply to a completed roof assembly, the IFC largely applies to the installation (or reroofing) operations of a building roof assembly.

In the IFC, roofing-related requirements are provided in Section 303-Asphalt Kettles, Section 317-Landscaped Roofs, Section 905-Standpipe Systems (as they apply to landscaped roofs) and Section 3318-Safeguarding Roofing Operations. Also, a definition of torch-applied roof system is provided in Chapter 2-Definitions.

In IFC 2021, minor wording changes apply to the requirements in Section 317 and Section 905 for landscaped roofs; however, these changes do not appear to result in technical changes to the code's requirements.

There are no other roofing-related changes in IFC 2021.

## Get the I-Codes

As jurisdictions begin the processes of updating their codes, which I expect will occur later this year, you should be aware of the roofing-related changes incorporated into the 2021 I-Codes and have a copy of the applicable codes on hand. Jurisdictions' adoption processes typically are based on specifically defined periods after a code is first published.

You can purchase the 2021 I-Codes in soft cover or loose-leaf format or download them. ICC also offers a web-based version, Digital Codes Premium, which is available by either a monthly or annual subscription. To purchase the I-Codes, go to [code.iccsafe.org](http://code.iccsafe.org).

NRCA has a limited amount of the IBC 2021 and IECC 2021 available in soft cover format at ICC member pricing. To take advantage of the special pricing, go to [shop.nrca.net](http://shop.nrca.net). 📄🔗

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