



Reroofing and code compliance

The requirements for reroofing projects are getting more complex

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Reroofing existing buildings presents unique and increasingly complex challenges relating to code compliance. Although a building being reroofed may have been constructed according to the code applicable during original construction, reroofing projects typically trigger at least a partial upgrade to the currently applicable code(s).

Scope and applicability

Model building codes, including the International Building Code (IBC) and International Residential Code (IRC), are developed and maintained with the general intent of applying to buildings at the time of original construction. One exception is IBC and IRC also address reroofing—re-covering and replacing existing roof coverings on existing buildings.

In IBC 2015, roof assemblies are addressed in Chapter 15—Roof Assemblies and Rooftop Structures. Within IBC 2015, Chapter 15, Section 1511—Reroofing addresses reroofing. Previous editions of IBC addressed reroofing in Section 1510—Reroofing. The addition of a new section in IBC 2015 addressing radiant barriers above roof decks resulted in renumbering IBC 2015's subsequent Chapter 15 sections.

Also, IBC 2015's Section 1511—Reroofing is reformatted from previous IBC editions; however, reroofing requirements are generally similar among the various editions.

In IRC 2015 and its previous editions, roof assemblies are addressed in Chapter 9—Roof Assemblies. Within IRC's Chapter 9, Section R908—Reroofing addresses reroofing.

IRC's reroofing requirements generally are consistent with those of the same edition of IBC.

Reroofing requirements

IBC 2015's Section 1511.1—General indicates: "Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 15." This statement generally is interpreted to indicate that during reroofing operations, the new roof system itself needs to comply with the currently adopted code edition. However, other roof assembly components, such as the roof deck and attic ventilation, generally are not required as part of a typical reroofing project to be upgraded to the currently adopted code edition.

There are two notable exceptions to IBC 2015's Section 1511.1. In the first exception, roof coverings installed in roof system replacement and roof re-covering projects are not required to comply with the code's ¼-inch-per-foot minimum slope requirement for new construction projects provided the roof system allows for positive drainage. The code defines the term "positive drainage" similarly to NRCA, providing for drainage of the roof within 48 hours of precipitation.

A second exception applies to existing buildings that do not have secondary roof drainage provisions, such as overflow drains and overflow scuppers. In these instances, new secondary drainage does not need to be installed if the existing roof system provides for positive drainage. IBC's secondary roof drainage requirement first was

added in IBC 2009; secondary drainage was not required with IBC's previous editions. Using IBC 2009 or IBC 2012, it could be interpreted the addition of secondary drainage may be required during reroofing—this was not the intent of the 2009 code change.

IBC 2015's Section 1511.3—Roof Replacement addresses when roof system replacement (tear-off) is required instead of roof re-covering. Roof system replacement instead of roof re-covering is required any time the following scenarios exist:

- The existing roof has two or more applications of any type of roof covering.
- The existing roof is water-soaked or deteriorated to the point it will not provide an adequate substrate for roof re-covering.
- The existing roof covering is slate, clay, cement or asbestos-cement tile.

Where the code requires roof replacement, tear-off of all layers of roofing down to the deck is required. Peeling off the topmost roof layer and re-covering an underlying roof layer is not permitted.

When the existing roof assembly includes an existing ice dam protection membrane, the existing ice dam protection membrane is permitted to remain in place provided it is covered with an additional layer of ice dam protection.

IRC 2015's requirements for reroofing generally are the same as IBC 2015's requirements.

Two legacy model building codes (Building Officials and Code Administrators National Building Code and Standard [Southern] Building Code), IBC 2000 and IRC 2000 contained a provision

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applicable to reroofing commonly referred to as the “25 percent rule.” This provision exempted reroofing projects limited to 25 percent or less of a building’s roof area from needing to comply with the currently applicable code’s reroofing requirements. It is important to note this provision was removed in IBC 2003, IRC 2003 and subsequent editions and no longer applies to reroofing. It generally is interpreted any roof system replacement or roof re-covering project regardless of its size or scope now is required to comply with the code’s reroofing requirements.

Roof repairs (small patches) typically are interpreted as being exempt for code upgrades provided the repair is of like material and application method to the surface being repaired.

Energy code compliance

Beginning with the *International Energy Conservation Code, 2012 Edition* (IECC 2012) and continuing in IECC 2015, compliance with currently adopted energy code is a requirement for roof system replacement projects on commercial buildings (nonresidential buildings). IECC 2012’s Section C401.2.1—Application to Existing Buildings makes compliance with the energy code applicable to “Additions, alterations and repairs to existing buildings”

This requirement typically is interpreted as being applicable to roof system replacement projects; roof re-covering projects generally are considered exempt.

As a result, when IECC 2012 is adopted, roof system replacement projects are required to comply with the code’s minimum thermal insulation (R-value), roof reflectivity and air barrier requirements similar to those for new construction projects.

An exception in IECC 2012’s residential requirements (Section R101.4.3—Exception 5) exempts the need to make R-value upgrades to comply with IECC 2012 “... for roofs where neither the sheathing or the insulation is exposed” It generally is interpreted this exemption applies to reroofing residential steep-slope roof systems where the existing attic insulation is not exposed (the roof deck is not replaced).

In IECC 2015, energy code requirements applicable to existing buildings are more clearly provided in Chapter 5 [CE]-Existing Buildings for commercial buildings and Chapter 5 [RE]-Existing Buildings for residential buildings.

Although IECC 2015’s requirements for reroofing are substantially the same as IECC 2012’s requirements, one notable change relates to air barriers. Exception 5 to IECC 2015’s Section C503—Alterations indicates “*Air barriers* shall not be required for *roof recover* and roof replacement where the *alterations* or renovations to the building do not include alterations, renovations or repairs to the remainder of the building envelope.” In the code’s text, italicized terms are specifically defined terms.

Also, IECC 2015 clearly indicates “roof repairs” are not intended to be subject to the code’s requirements and are defined as reconstruction or renewal of any part of an existing roof for the purpose of its maintenance.

IEBC 2015

For the first time, the *International Existing Building Code, 2015 Edition* (IEBC 2015) includes specific code requirements applicable to reroofing. IEBC 2015 only is applicable where it is specifically adopted, and in many cases IEBC 2015 may not be adopted concurrently with IBC 2015 and IRC 2015. Where adopted, IEBC 2015’s structural reroofing requirements may be more stringent than IBC’s and IRC’s reroofing provisions.

IEBC 2015’s scope indicates it “... shall apply to the repair, alteration, change of occupancy, addition to and relocation of existing buildings.” Furthermore, IEBC 2015 classifies work on existing buildings into three categories: Level 1, Level 2 and Level 3.

Level 1 alterations include removing and replacing or covering existing materials, elements, equipment 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’s 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 IBC 2012’s (not IBC 2015’s) Section 1510—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 materials need to comply with IBC. Exceptions to this requirement include where the dead load does not increase element forces by more than 5 percent; buildings designed in accordance with IBC’s conventional light-frame construction methods or IRC; or where 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 unreinforced masonry parapets for buildings where more than 25 percent of the roof area is being reroofed in Seismic Design Category D, E or F to have 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) designed with roof diaphragms (roof decks) to be evaluated for structural adequacy. This requirement applies when more than 50 percent of the diaphragm is exposed 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.

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Designers should determine whether IEBC 2015 is applicable and clearly indicate any additional work required for compliance in the construction documents. The International Code Council (ICC), publisher of IEBC 2015, indicates it already 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.

Which code applies?

Because building, residential, energy and existing building codes, as well as other codes, can be adopted at the municipal, county or state levels, when your company performs reroofing projects in multiple jurisdictions, different combinations of codes may apply. Therefore, it is important you be aware of which codes—and which specific editions of those codes—apply to each reroofing project.

Code applicability can be determined by contacting the AHJ (building code department) for the location of a specific reroofing project.

NRCA encourages all roofing professionals—roof system designers, material and product manufacturers and suppliers, roof consultants and roofing contractors—to be aware of the specific codes that apply in the areas where they do business. You also should be aware of the specific codes' provisions applicable to the work for which your company is responsible.

Additional information regarding IBC, IRC, IECC and IEBC is available from ICC's website, www.iccsafe.org

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