TECHNICAL BULLETIN

Roof Covering Repair Requirements and the International Codes

Overview:

Metal roof materials are common in the building code and are regulated for structural and fire performance in Chapter 15 of the International Building Code (IBC). The service life of metal roofing is typically extremely long however there are instances where changes in roof mounted equipment or roof damage may result in the need for roof repairs. On many occasions, MCA has been asked what types of roof repair materials are required and what direction is provided by the codes. Material decisions are often based on two factors.

1. The required structural performance of the roofing assembly.
2. The fire classification required for the roofing assembly.

These two factors are covered through a combination of IBC Chapter 15 and Section 705 Reroofing in the International Existing Building Code (IEBC)

Discussion:

When buildings are Reroofed, the IBC is very clear in Section 1512 Reroofing that the materials and methods of application used for either recovering or replacing the existing roof covering must comply with the performance requirements of Chapter 15 with two very specific exceptions.

1. Roof replacement or recover of an existing low slope roof shall not be required to meet the minimum design slope requirement defined in section 1507 (2% slope) for roofs that provide positive roof drainage and meet the requirements of Sections 1608.3 and 1611.2 (ponding instability).
2. Roof replacement or recover shall not be required to meet the requirement for emergency overflow as defined in Section 1502.2 for roofs that provide for positive roof drainage and meet the requirements of Sections 1608.3 and 1611.2 (ponding instability).

Structural Performance

The most obvious requirement of the roof assembly is that the structural roof components shall be capable of supporting the roof-covering system and the expected material and equipment loads that will be encountered during both construction and the service life of the roof system.

The roof-covering system shall also be capable of resisting the anticipated wind and snow loads. This would include the requirements of ASTM E1592 or FM 4474 for structural standing-seam metal panel roof systems or ASTM E1592 FM 4474 or UL 580 for structural through-fastened metal panel roof systems. (Exceptions apply for cold-formed steel roofs designed in accordance with Section 2210.1 and aluminum roofs designed and tested in accordance with Section 2002.1). (1504.4.2)

Metal roof shingles shall be tested in accordance with ASTM D3161, FM 4474, UL 580 or UL 1897. Metal roof shingles tested in accordance with ASTM D3161 shall also meet the classification requirements of Table 1504.2. (1504.4.3)

Roof coverings shall also meet the impact resistance requirements of Section 1504.7.

Fire Classification

Many roofs are required to meet fire resistance performance levels determined by ASTM E108 or UL 790. (1505.1) Typically, the roof will be designated “Class A”, “Class B” or “Class C” depending upon the fire performance rating in these tests.

While the repairs can be accomplished using a variety of currently available materials, the important issue is maintaining the overall structural, fire, and weather-resistant performance of the roof assembly.

Conclusion:

While the majority of the ICC codes target new construction, there are specific performance requirements defined in the IEBC.

For roof assemblies, the reference code section is 705 where it is clearly stated that the level of performance for the building should not be diminished by any repairs that take place. This guidance should aid designers and building maintenance personnel in material selection and building departments providing roof repair permits.

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