New ASTM roofing standards

by **Mark S. Graham**

The American Society for Testing and Materials (ASTM) recently published two new standards applicable to roofing. One addresses concrete tile roof products, and the other addresses evaluating low-slope membrane roof assembly performance. The standards provide new information, and if you are involved with these roof system types, you should be familiar with the new standards.

Concrete tile

ASTM C1492, "Standard Specification for Concrete Roof Tile," is a product standard applicable to concrete tile used in roofing. The standard applies to concrete tile intended as a roof covering that is required to be durable and weather-resistant.

The standard classifies concrete tile based on configurations. Types I, II, III and IV define high-, medium- and low-profile tile and accessory tile shapes, respectively.

Test methods included in the standard provide for testing of concrete tiles' dimensional tolerances, freeze-thaw resistances, transverse strengths, permeability and water absorption. Specific criteria are provided for each test method to establish standard conformance. For example, to test freeze-thaw resistances, tile specimens are subjected to 50 cycles of freezing and thawing by a specific method prescribed in the standard. Tile is considered to have passed the ASTM test if, at the completion of the cycling, all tested specimens remain unbroken and no individual specimen loses more than 1 percent of its original dry weight.

Compliance with ASTM C1492 is documented by written certification from tile manufacturers to tile purchasers. When specified, a report of specific test results can be furnished by a tile manufacturer.

Roof performance

ASTM D6630, "Standard Guide for Low Slope Insulated Roof Membrane Assembly Performance," provides criteria for assessing and reporting performance attributes of low-slope membrane roof assemblies. The standard is intended to establish minimum performance levels for insulated roof membrane assemblies and lists pertinent design guidelines.

The standard classifies low-slope roof assemblies based on roof construction type. New, replacement (tear-off and replacement) and re-cover roof assemblies are classified as Class I, II and III, respectively. Also, further classification is provided based on roof assembly attachment method. Adhered, loose-laid and ballasted, air-pressure equalized, partially attached/mechanically fastened and protected membrane roof assemblies are classified as Method A, B, LD, M and P, respectively.

Specific test methods are provided for evaluating roof assembly static indentation resistance, dynamic indentation resistance, cyclical fatigue, heat conditioning, ultraviolet radiation, water exposure, moisture permeance, tear resistance, tensile strength, elongation and strain energy.

The standard also provides general information for designing low-slope membrane roof assemblies. Minimum design requirements for each functional layer, such as structural deck, thermal insulation and membrane, are provided.

ASTM D6630 should be particularly useful for comparing attributes of various low-slope membrane roof assemblies during design and when assessing newly introduced roof assembly configurations. The standard is not intended to be used for evaluating in-service roofing materials or roof assemblies.

Closing thoughts

Roofing professionals, particularly those involved with tile or low-slope membrane roof assemblies, should familiarize themselves with the new ASTM standards.

Implementation of ASTM C1492 likely will take place during the next several years. The standard probably will be incorporated into building codes as a minimum product requirement for concrete tile roof assemblies.

ASTM D6630 likely will be implemented over a longer period of time. It will be interesting to see whether manufacturers of various low-slope membrane roof assembly material types use the standard to differentiate their products from other roof assemblies.

ASTM C1492 and ASTM D6630 are available from ASTM as individual standards and are contained in the 2001 edition of ASTM's *Annual Book of Standards*, volumes 04.05 and 04.04, respectively. Both volumes are available by calling ASTM at (610) 832-9585 or accessing its Web site, www.astm.org.

Mark S. Graham is NRCA's associate executive director of technical services.

