BUR concerns

by Mark S. Graham

Hot-applied, built-up roof (BUR) systems continue to enjoy widespread acceptance and use in the U.S. roofing market. However, several BUR application-related issues have developed that need to be addressed.

Interply mopping weights

NRCA has received reports of at least one manufacturer that has instituted interply mopping weight requirements instead of the equiviscous temperature (EVT) concept. In a particular instance, a manufacturer's application guidelines call for interply moppings of " ... approximately 25 lb. per 100 sq. ft. (1.2 kg/sq m) of roof surface (±15%)." When test cuts were taken following installation, an interply mopping weight was found to be less than the guideline. The manufacturer refused to issue its warranty because the installation was not according to the manufacturer's guidelines.

NRCA subsequently surveyed BUR membrane manufacturers and found their application guidelines vary significantly from what has been considered standard industry practice. Several manufacturers have interply mopping weight guidelines similar to what I quoted earlier and also reference the EVT concept. Other manufacturers allow for wider interply mopping weight ranges. Four manufacturers do not directly reference EVT, relying solely on interply mopping weights.

For more than 20 years, NRCA has advocated the necessity of a continuous film of bitumen between a BUR system's plies, and this is best achieved applying the EVT concept, not prescriptive interply mopping weights. EVT, the temperature at which bitumen attains the proper viscosity for application, is specific to a particular batch or lot of bitumen. Experience has shown bitumen applied within EVT guidelines generally will produce an interply mopping weight of 18 pounds per ply to 32 pounds per ply per 100 square feet (0.9 kg/m^2 to 1.6 kg/m^2 per ply).

NRCA's positions addressing EVT, bitumen quantities and total job average basis are included in *Quality Control Guidelines for the Application of Built-up Roofing*, which is published jointly by NRCA and the Asphalt Roofing Manufacturers Association.

ASTM D312

In 2000, NRCA conducted a laboratory study of commercially available mopping asphalts complying with ASTM D312, "Standard Specification for Asphalt Used in Roofing." The study revealed asphalts' actual EVTs and flash-point temperatures were not as indicated on package markings and, in many instances, labeled flash-point temperatures were relatively low compared with actual EVTs. Because the flash point is the lowest temperature at which vapors above a volatile combustible substance ignite in air when exposed to flame, the differential between an asphalt's EVT and flash-point temperature is an important consideration during application.

In 2002, after consulting several asphalt suppliers and BUR manufacturers, NRCA proposed a change be made to ASTM D312, "Standard Specification for Asphalt Used in Roofing." The change would require a minimum temperature differential of 75 degrees Fahrenheit (42 degrees Celsius) between an asphalt's EVT and flash point. NRCA views this figure as an absolute minimum differential necessary for proper application.

ASTM International's Committee D08 on Roofing and Waterproofing, which has jurisdiction over ASTM D312, finally balloted NRCA's proposed revision in 2005. This ballot was not approved because several asphalt suppliers said they would not be able to consistently achieve this differential with their products and such a differential is not necessary. Interestingly, several designers and contractors also voted against the ballot, citing the proposed differential as too narrow.

Closing thoughts

Issues regarding interply mopping weights and the temperature differential between asphalt's EVT and flash point must be addressed to maintain BUR's viability.

I encourage asphalt suppliers and BUR manufacturers to re-evaluate their application guidelines to appropriately address these concerns. Until these issues are addressed, specifiers of BUR systems are encouraged to incorporate the EVT concept into their specifications. Also, instead of relying solely on ASTM D312 for describing asphalt, specifiers should specify mopping asphalts with large temperature differentials between their EVTs and flash points. Asphalts with a minimum 125 degrees Fahrenheit (69 degrees Celsius) differential are readily available from some suppliers.

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