# Construction-generated moisture

## SPRI issues a bulletin aimed at reducing moisture in single-ply roof systems

by Mark S. Graham

In late 2008, SPRI issued an advisory bulletin addressing construction-generated moisture and its effect on roof systems. If you are involved with the design and installation of single-ply membrane roof systems, particularly those used in new construction, I encourage you to be aware of this bulletin and SPRI's recommendations.

### The bulletin

SPRI's bulletin indicates roof systems are designed to accommodate typical occupancy-generated moisture; however, construction-generated moisture rarely is recognized and seldom is addressed by roof system designers.

Possible sources of construction-generated moisture cited include the curing of concrete; use of propane- or oil-burning heaters; and paint, drywall and other water-based construction materials.

The bulletin indicates in moderate climate regions (American Society of Heating, Refrigerating and Air-Conditioning Engineers [ASHRAE] Inc. Climate Zones 1 through 3), construction-generated moisture may go unnoticed until musty air is detected or mold growth is discovered. In colder climate regions (ASHRAE Climate Zones 4 through 7), construction-generated moisture may be detected in the form of drips inside buildings after the season's first freeze-thaw cycle.

SPRI recommends planning for construction-generated moisture during the design process. SPRI suggests providing adequate ventilation during concrete curing and other high-moisture-related construction activities and the use of high-volume ventilation systems that include dehumidification.

SPRI's bulletin indicates HVAC systems designed for temperature control only of finished buildings are not sufficient to remove construction-generated moisture.

SPRI also recommends that in cold climate regions (ASHRAE Climate Zones 5 through 8), roof system designers should consider the use of a properly placed vapor retarder, multiple insulation layers, and sealing deck-to-wall joints and gaps around penetrations. In addition, wet materials or materials with excessive moisture content should be avoided.

In buildings where water drips are frequent, SPRI recommends the indoor relative humidity be measured and if it exceeds the outdoor relative humidity, a condensation problem may exist. In such instances, SPRI recommends interior ventilation and dehumidification. Also, the interior design operating temperature should be verified, sealing of deck-to-wall joints and gaps around penetrations should be verified, and better interior air circulation should be provided to prevent moisture-laden air from accumulating beneath the roof deck.

### Closing thoughts

SPRI's Advisory Bulletin provides roof system designers with some guidelines for addressing construction-generated moisture and its effects on single-ply membrane roof systems. Some considerations may be useful for other roof system types.

SPRI's recommendation for using multiple insulation layers is consistent with NRCA's recommendation; however, SPRI's recommendation appears to be limited to Climate Zones 5 through 8. In its roofing manual, NRCA recommends the use of multiple insulation layers with staggered board joints throughout North America.

Also, SPRI's recommendation for using vapor retarders in Climate Zones 5 through 8 regardless of interior moisture conditions seems conservative—possibly overly conservative. In mixed climate regions (heating and cooling), vapor retarders typically are only used for buildings designed with high internal humidity conditions.

Additional information regarding condensation control in buildings is provided in the Moisture Control Section of *The NRCA Roofing and Waterproofing Manual, Fifth Edition* and in the *ASHRAE Handbook—Fundamentals*.

For links to ASHRAE's climate zone maps and SPRI's Advisory Bulletin, log on to www.professionalroofing.net.

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