

Shelter From The Storm

Rethinking installation and maintenance practices can help safeguard roofs against increasingly severe weather.

By Jillian Ruffino



PHOTO: Firestone Building products; Johns Manville

Long before mankind could imagine such inventions as air conditioning, high tech security, or cubicles, it discovered the benefits of a secure, watertight structure to protect against the elements. From the natural shelter of cave dwellings man emerged to construct roofs from various native materials, including animal skins, dirt and twigs, and tree bark. These early roofs needed to be completely portable and likely required constant repair.

In some ways, very little has changed. The essential purpose of a roof—to shield building occupants from the ravages of weather—is the same. And every roof expert shares one basic tenet—roofs should not leak.

These days, the demands placed on roofs have changed significantly. They are expected to last 20 years or more and, with proper preventive maintenance and inspections, should not fail, particularly during inclement weather. In many ways, inclement weather is a top concern for facility managers. Severe climate conditions have prompted facility professionals to take a cautious stance. What has changed over the years, and what is the best preparatory approach?

Weathering The Storm

Facility managers must keep in mind many things when renovating, replacing, or designing a maintenance plan for roofs. Katrin Scholz-Barth, principal of Washington, DC-based Katrin Scholz-Barth Consulting, a firm that specializes in green roofs and storm water permitting, cites increased wind loads and more frequently occurring 100 year rainfalls, hurricanes, and hail storms. (One hundred year rainfalls are defined as the amount of rainfall during a specific length of time that has a 1% chance in any given year of being equaled or exceeded.)

John Geary, director of marketing for Indianapolis, IN-based Firestone Building Products, agrees that changing weather is a new factor in roofing. “Facility managers and building owners must be aware of the need for roofing systems that do more than just keep water out of their facilities. All across the country, increased durability and high performance roofing systems are important protection against hurricane force winds and golfball sized hail.”

Stew Snoddy, vice president of Stevens Roofing Systems in Holyoke, MA, adds, “The ozone layer is depleting, which will have an effect on roof performance.”

The impact of the sun’s rays on a roof can also be particularly harmful. Roofing materials can decay over time due to the sun’s heat and ultraviolet rays.

Fortifying a facility from the dangers of extreme conditions is significant not only for the sake of the building and its occupants, but also because these weather changes are precipitating modifications to the legal requirements for roofs. Codes are being revamped in light of recent weather changes along with the push to create cheaper, more energy efficient solutions.

Scholz-Barth explains, “Climate and weather have always affected roofing decisions, from load bearing capacity to insulation requirements. Recent changes in weather have prompted reviews and edits to building codes to increase protection against more extreme weather.”

Sarah Tholen, manager of marketing communications for Johns Manville, headquartered in Denver, CO, adds, “Code changes that deal with wind resistance and energy efficiency, such as Title 24 in California, are driving changes in the industry.”

Many companies, including Johns Manville, are developing products based on this ongoing overhaul. “For example,” Tholen continues, “JM developed a mineral-surfaced, white acrylic coated fiberglass cap sheet so multiple roofing systems could comply with Title 24.”

Other companies are taking climate and code modifications into account during the research and development process for new products. At Firestone Building Products, Geary explains, “We have introduced products and systems that use 90 mil EPDM rubber and 80 mil reinforced thermoplastic polyolefin (TPO) membranes as part of assemblies that can withstand wind speeds up to 100 mph. In addition, new metal edge details reflect the importance of properly anchored roof systems at the perimeter of buildings to meet increasingly stringent codes.”

Keeping Pace With Change

Proper maintenance and informed decisions can help ensure a long life for a facility’s roof. To explain it simply, Scholz-Barth says, “Past and current, the most pressing issue and greatest challenge in roofing is to provide a reliable, watertight, and leak free waterproofing system for a 20 year service life.”

These issues will always be at the top of every facility manager’s list of concerns. The question is, how should they be addressed?

It is possible to prolong the life of a roof, diminish the impact of regular wear and tear, and ensure the roof remains in good condition during a storm through adequate maintenance practices. However, it is easy to install a roof and forget about it until something goes wrong. This is a mistake that could lead to leaks or potentially damaging roof failure.

“Roofs are not maintenance free. Some roofing types require less maintenance than others, but they all require some degree of upkeep,” says Snoddy. “The better this asset is maintained and cared for, the longer service life facility managers will get in return.”

Inspections are necessary to prevent costly damage. Some problems may not be evident from a superficial perspective, Tholen warns. “A leak is an obvious problem. Less obvious, however, is wet insulation, which can cause an organization to lose thousands of dollars of thermal investment. The investment in a regular maintenance, inspection, and repair program is imperative to manage the roof properly.”

[To read about how infrared inspections can help locate wet insulation, read “Infrared Technology Can Improve Safety And Operations” online at TFM.com.]

Facility managers cannot be experts in every aspect of building design; in this matter, it is necessary to consult with specialists. Geary suggests conferring with a qualified architect, consultant, or roofing contractor when starting a maintenance program or renovating or replacing a roof. These professionals can provide crucial recommendations.

Tholen concurs. “There is a renewed effort to educate and communicate the four basic principles of performance criteria, which include design, materials, installation, and maintenance. Roofing contractors and manufacturers are working to educate and train personnel and customers regarding roof systems and these criteria.” Tholen also stresses the importance of becoming familiar with today’s newest roofing materials and systems. Innovation is following in the wake of a need for stronger and more energy efficient roofs.

Joseph W. Mellot, director of technology at Cleveland, OH-based The Garland Company, Inc., offers these examples: “It is likely that future roofs will have some greater level of reflectivity, although they may not necessarily be ‘white.’ Advancements in pigment technologies and an increasing understanding of optimum reflectivity and emissivity in relation to specific geographic regions are making it likely that tomorrow’s designers will be customizing roofs to the specific energy requirements of individual buildings.”

In fact, customization is key. Snoddy asserts that a commonly held but incorrect belief is there is only one solution to any given problem or that there is a “silver bullet roofing option.” His recommendation is this: “Talk with several contractors, and understand what they are suggesting and why. Review every product choice and consider bringing in manufacturers’ representatives from a few different companies to gain a better understanding of the technical differences in the products recommended.”

Specific climates also require different types of roofs, and in some areas, additional preventive maintenance and more frequent inspections may be necessary. Depending on the geographic location of a facility, products must be chosen carefully to accommodate for different weather phenomena.

These days, new options for roofing products often reflect the need for greater strength as well as sustainability. Geary says, “Roofs will soon include more durable membranes, better reflective surfaces, higher insulation R-values, and enhanced attachments.”

Snoddy adds, “New polymers and polymer technologies are available that have the potential to provide a long-term, highly effective roofing solution.

“Also, facility managers should understand the basics,” continues Snoddy. “Sloped roofs are better than flat roofs. If a facility has a flat or relatively flat roof, it could be wise to consider a change that encourages water to leave the roof, rather than reroofing and ending up with the same problems.”

Concerns for the future can be offset today with careful planning. Facility managers must be prepared for whatever may come. Roofs today can last several decades and protect a building and its occupants from serious forces of nature.

This article was based on interviews with Geary, Mellot, Scholz-Barth, Snoddy, and Tholen.