



Designing for hail resistance

Did you know FM Global has updated its hail design guidance?

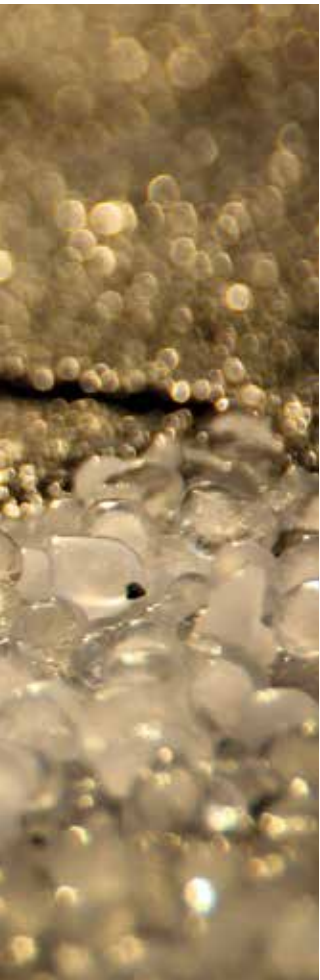
by Mark S. Graham

In March, property and building loss insurer FM Global updated its Property Loss Prevention Data Sheet 1-34, “Hail Damage” (FM 1-34). If you work on buildings insured by FM Global, you should be aware of its latest hail-resistance guidelines and the effects they may have on roof system selection and design.

FM 1-34

FM 1-34 provides loss-prevention guidelines to minimize the potential for hail damage to buildings, roof-mounted equipment and other outdoor equipment. FM Global intends FM 1-34 and its other Property Loss Prevention Data Sheets to apply to its insured buildings. However, some designers use the Property Loss Prevention Data Sheets as design guidelines for buildings (and roof systems) other than those insured by FM Global.

FM Global contends hailstorms are a widespread hazard affecting many areas of the world that can severely damage buildings’ roof systems, rooftop HVAC units and skylights. Cooling towers and exposed glass and plastic components of outdoor equipment also can be



damaged. Providing hail-resistant exterior building components and equipment can reduce this hazard's impact.

The previous edition of FM 1-34 was published in October 2014. Since then, FM Approvals developed and published a new hail-resistance test method, "Test Procedure, Test Method for Determining the Susceptibility to Hail Damage of Roof Coverings." This test method is incorporated into a December 2016 update to FM 4470, "Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible

Roof Deck Construction." FM Approvals' new hail-resistance test method and FM 4470 include a new very severe hail (VSH) approval classification.

Changes

The most notable change in FM 1-34 is the implementation of the VSH approval classification into hail-resistance design guidelines.

FM 1-34 divides the continental U.S. into three hail zones: moderate hail (MH), severe hail (SH) and VSH hazard areas. A hailstorm hazard map for the contiguous U.S. is provided. The map's SH and VSH hazard areas

significantly are expanded from FM 1-34's previous edition. FM Global indicates the new map is based on relative hail sizes during a 15-year mean recurrence interval.

Based on the map, the VSH hazard area consists of Kansas, Nebraska, Oklahoma and South Dakota; a large portion of Texas; and portions of Arkansas, Colorado, Iowa, Minnesota, Missouri, Montana, New Mexico, North Dakota and Wyoming.

The SH hazard region extends from Colorado, Montana, New Mexico and Wyoming east to the Carolinas, Florida panhandle, Georgia, Indiana, Kentucky, Minnesota and Wisconsin.

The MH hazard area makes up the remaining areas of the contiguous U.S. not categorized as either SH or VSH hazard regions.

In the VSH hazard region, FM Global recommends single-ply and polymer-modified bitumen membrane roof systems have an FM Approvals' VSH approval classification. FM Global considers built-up membrane and metal panel roof systems having an SH approval classification and asphalt shingle

and clay tile roof systems complying with FM Approvals' Class 4 to be acceptable where VSH roof systems are unavailable.

In the SH hazard region, FM Global recommends using any roof system having an MH, SH or VSH approval classification or complying with FM Approvals' Class 2, 3 or 4.

Concrete paver and aggregate-ballasted roof systems are acceptable in all hail hazard regions.

FM 1-34 also includes hazard zone-specific

design recommendations for FM Approvals-approved impact-resistant skylights or use of hail guards or mesh covers. Hail guards or mesh covers also are recommended for rooftop HVAC units and other rooftop equipment vulnerable to hail damage.

Design

Complying with FM Global's latest hail-resistance guidelines can affect roof system selection and design, particularly in the VSH hazard region.

I recently performed a query using FM Approvals' RoofNav application (www.RoofNav.com) and found there are 948,121 FM Approvals-

approved roof assemblies having an MH or higher approval classification. Of these, 937,291 roof assemblies have an SH approval classification. Only 258 roof assemblies have a VSH approval classification.

Also, FM 1-34 indicates there are no skylights available with a VSH approval classification.

Roof system designers should be aware whether FM Global's hail-resistance guidelines apply to their specific projects, and, if so, they should clearly specify hail-resistant roof systems and rooftop components.

FM 1-34 and FM Global's other Property Loss Prevention Data Sheets are accessible at www.FMGlobalDataSheets.com. 🌐📄🔍

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For an article related to this topic, see "Understanding FM VSH," December 2017 issue.

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Technology could help attract next generation of construction workers

Although the construction industry may appear hesitant to embrace new technology compared with other industries, many construction companies are taking steps to implement helpful technology on job sites. As the industry continues to evolve, companies will have to embrace more innovation to attract millennial workers and those even younger, according to www.forconstructionpros.com.

Millennials have grown up with digital devices, and many possess emerging technology skills companies may be able to leverage on job sites, including drones, artificial intelligence, virtual reality, smartphone apps, tablets and wearables.

“Job sites today are so far removed from what millennials have come to expect in their daily lives,” says Chad Hollingsworth, co-founder and CEO of Triax Technologies, Norwalk, Conn. “They expect new solutions to do their jobs better, to get rid of manual processes.”

Closing the gap between seasoned construction professionals and millennials could prove challenging. Seasoned pros may be hesitant to adopt new systems, and younger, tech-savvy individuals may not have much experience with traditional construction methods.

“Older generations look to millennials for how to incorporate the tech into the job site,” says Paul Gomori, application engineering manager for JCA Electronics, Winnipeg, Manitoba.

Additionally, millennials’ attitude and outlook toward life and their careers can help entice them to work in the construction industry.

“Millennials want to add value, make an impact and find meaning in what they’re doing,” Hollingsworth says. “This carries over into their professional lives.”

But attracting millennials during the ongoing workforce shortage is not the only advantage of having more technology on job sites, according to Barry Peyton, product manager for Intelliwave Technologies, Leduc, Alberta. He says newer devices and methods can help improve efficiency and productivity and produce tangible results.

Hollingsworth also recognizes the long-term benefits of technology integration at construction job sites.

“The right construction technology can centralize information and communication, improve safety and reduce the amount of time spent on non-value-added tasks,” he says. “It is something (workers) can use to develop their skills, streamline daily tasks and ultimately become better at their jobs.”

Building Safety Month recognizes the importance of building codes

Government agencies, corporations, nonprofit organizations and building industry professionals are invited to celebrate the International Code Council’s (ICC’s) 38th annual Building Safety Month in May.

Building Safety Month is a global event highlighting the importance of building safety codes and the role code officials have in providing safe places for people to live, work and play. Modern building codes and standards incorporate the latest technology to help designers and builders create safe, resilient structures.

“Modern, regularly updated building codes ensure the homes we live in and the schools, hospitals, offices and stores we frequent are able to withstand structural failures, fires and natural disasters,” says ICC CEO Dominic Sims. “These codes affect each and every one of us every day of our lives.”

More than 50 state governors, ICC chapters and local leaders have issued proclamations in support of Building Safety Month, and 19 organizations are financially sponsoring the initiative, including the National Association of Home Builders and National Institute of Building Sciences.

Throughout the month, ICC, local building departments and other supporters are bringing together architects, builders, manufacturers, code officials and other industry experts to discuss the importance of building codes and why they matter. A calendar of Building Safety Month events is available at www.iccsafe.org/events.



NRCA announces significant updates to Roof Wind Designer

NRCA has updated Roof Wind Designer, an online wind-load calculator intended to help roofing professionals determine roof systems’ design wind loads for many commonly encountered building types subject to code compliance.

The free calculator has been updated to reflect significant changes made to ASCE 7, “Minimum Design Loads and Associated Criteria for Buildings and Other Structures,” including basic wind map changes, new roof zone layouts and updates to pressure coefficients.

Roof Wind Designer now can perform wind-load calculations for the 2016 version of ASCE 7, and users can choose between three versions of the standard: ASCE 7-05, ASCE 7-10 and ASCE 7-16.

The 2016 version also can be used on flat buildings up to 160 feet using the standard’s Chapter 30, Part 4: Buildings with 60ft < h ≤ 160ft (Simplified), enabling users to calculate a wider range of buildings. Design wind loads for other applicable buildings are calculated pursuant to simplified low-rise procedures for each standard.

Roof Wind Designer initially was developed in cooperation with the Midwest Roofing Contractors Association and North/East Roofing Contractors Association.

Additional information about Roof Wind Designer is available at www.roofwinddesigner.com.