FM Global makes changes

FM Global Loss Prevention Data Sheets have updates that affect the roofing industry

by Mark S. Graham

In January, Factory Mutual Insurance Co., commonly referred to as FM Global, updated several of its Property Loss Prevention Data Sheets. These data sheets provide designers with property loss prevention guidance for specific building attributes, including roof assemblies. An overview of the roofing-related changes follows.

FM 1-15

FM Global Property Loss Prevention Data Sheet 1-15, "Roof-mounted Solar Photovoltaic Panels," provides guidance related to the fire and natural hazards for the design, installation and maintenance of roof-mounted solar PV panels used to generate electrical power.

The January revision includes minor editorial changes from the previous July 2023 interim revision and January 2023 revision. Most notably, the latest revision clarifies all roof-mounted PV equipment should be checked at six-month intervals for any damage and required maintenance. This is in addition to previously called for checks after seismic or severe weather events, including windstorms, lightning, hail and snowstorms.

FM 1-28

FM Global Property Loss Prevention Data Sheet 1-28, "Wind Design," provides general guidance to building designers regarding wind considerations for property protection at highly protected buildings, including recommended design wind pressures for building components and cladding, protected openings and anchorage of roof-mounted solar PV panels. For main wind force-resisting systems and other structures, designers are referred to the specific edition of ASCE 7, "Minimum Design Loads and Associated Criteria for Buildings and Other Structures," required by the applicable building code.

The January revision, referred to as an interim revision, contains several changes from the previous July 2022 revision. Most notable: Tornado guidance has been moved from the document's appendix to Sections 2.11-Tornados, 3.12-Tornados and 4.0-References. With this change, tornado-resistant building envelopes, including roof assemblies, and roof-mounted equipment designs are recommended where design tornado wind speed is 140 mph or greater. A map is provided showing Arkansas and Missouri and portions of Alabama, Colorado, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Minnesota, Mississippi, Nebraska, Oklahoma, South Dakota, Tennessee and Texas are in a tornado region where the design tornado wind speed is 140 mph or greater. ASCE 7-22's 10,000-year mean recurrence interval map is conservatively used.

FM 1-28 provides a calculation method for determining ultimate tornado velocity pressure. FM Global recommends considering a building to be "partially enclosed" and assume a Surface Roughness Exposure C and Importance Factor of 1.15 for calculation purposes. Because this pressure calculation is by the ultimate design method, converting to the allowable stress design method by multiplying by 0.6 and adding a safety factor of 2.0 for new construction is recommended.

FM 1-28 further recommends not using roof aggregate of any type or size in a tornado region other than mineral surfacing for cap sheets and avoiding use of windows in exterior walls. Where windows are necessary and for large exterior doors, impact-resistant windows and doors tested according to FM 4350, "Approval Standard for Windstorm Resistant Fenestrations," or similar standards are recommended. Full-time inspection during the installation of exterior wall and roof components also is suggested.

FM 1-28 also revises the calculation procedure for vertical forces on roof-mounted equipment to prevent overturning in high winds. Use of FM-approved roof anchors tested according to FM 4481, "Anchors for Roof Mounted Equipment," are recommended to resist the horizontal and vertical forces calculated.

Finally, a new basic wind speed map, FM 1-28's Figure 11b, is added and provides basic wind speeds in the Canadian maritime areas of eastern Quebec and New Brunswick, Newfoundland and Labrador, Nova Scotia and Prince Edward Island.

FM 1-54

FM Global Property Loss Prevention Data Sheet 1-54, "Roof Loads and Drainage," provides recommendations for snow loads, roof live loads, rain loads and roof drainage for the design of new roofs on buildings and other structures. It also provides recommendations for snow monitoring and removal.

The January revision includes minor editorial changes from the previous July 2023, October 2021 and July 2021 revisions. Significant changes were made in the April 2021 revision.

Final thoughts

Designers and roofing contractors working on FM Global-insured buildings should be aware of FM Global Property Loss Prevention Data Sheets and the latest revisions. FM 1-28's addition of tornado-resistant building envelope construction criteria for FM Global-insured buildings in the tornado region in the central U.S. has a significant effect on building designs.

FM Global's wind loss experience has been more favorable with structural concrete roof decks than steel roof decks. The use of steel roof decks is still possible; however, steel roof decks will need to be designed for higher tornado-resistant loads. Such designs may include narrower joist spacing resulting in shorter steel roof deck spans, use of thicker or deeper steel roof deck, and increased steel roof deck securement to joists or purlins.

In the central U.S., most conventional wind designs are based on relatively low wind speeds (for example, V_{ASD} equals 90 mph). FM Global indicates cost increases to change from 90-mph wind design construction to FM 1-28's higher tornado-resistant construction will vary based on specific project conditions but could be as high as 50%.

FM Global Property Loss Prevention Data Sheets can be found at fmglobaldatasheets.com. ♻●❋

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Artificial intelligence can help predict company's futures

With the topic of artificial intelligence on the rise, a recent *Forbes* article reported AI shows promise regarding analyzing data and predicting future outcomes.

Forbes shares the following three ways AI can help predict your company's future.

- *Financial forecasting.* Strategic planning for a business involves using historical data to forecast revenue and other financial data. The Association for Financial Professionals says AI forecasting can identify patterns from large datasets and offer fast, accurate predictions of financial performance and market trends. German technology conglomerate Siemens reported a 10% improvement in financial forecasting when using AI.
- *Predicting customer preferences.* It is important for businesses to gather data regarding customer behavior, and being able to predict what customers may want in the future can be significant. AI-powered customer relationship management systems identify patterns from demographic data and purchase histories to group similar customers together, a process that reportedly can be used to predict customer desires and market trends.
- *Anticipating inventory.* Maintaining a certain amount of inventory can be a delicate balance, and AI can use historical data and ongoing trends to predict what products or services may soon be in demand. AI also can factor in the production time of items to alert business owners when they may need to boost their inventory.

To view the *Forbes* article highlighting AI trends and statistics in technology and business, go to professionalroofing.net.

SPRI posts white paper on IBC change

SPRI has posted a new white paper detailing the process of building consensus among multiple diverse stakeholders to change the International Building Code.® The company, along with representatives from the Asphalt Roofing Manufacturers Association, Lightning Protection Institute, National Electrical Manufacturers Association, NRCA, Roof Coating Manufacturers Association, UL Solutions and United Lightning Protection Association, worked to build consensus to have new language written, approved and adopted into the IBC.

The 2024 IBC includes language clarifying how lightning-protection systems, when used on commercial structures, should be attached to gutters, metal edge systems, roof covers and roof assemblies. The new language has been added as subsections in Section 1511-Rooftop Structures and stipulates the work must be completed in accordance with the instruction of the manufacturer or a design professional. The language also notes lightning-protection system components must be properly flashed where they are secured to or penetrate a roof.

The white paper, titled "Lightning Protection Code Change Updates," was co-written by SPRI and the Lightning Protection Institute and is available at spri.org.

ABC releases artificial intelligence resource guide for contractors

Associated Builders and Contractors has released an AI technology guide for the construction industry, including definitions, construction use cases and considerations. The purpose of the guide is to provide a level of knowledge to ensure contractors can be active participants in the construction AI conversation.

"The possibilities of AI technology may sound endless, but we must first educate ourselves on the basics. This resource is a starting point to understanding AI and its potential impact on the construction industry," says Patrick Scarpati, ABC's director of construction technology and innovation and the guide's author. "The industry has opportunities to evaluate how we can better deliver projects. We can lean on AI in achieving essential goals like enhanced safety design, knowledge transfer, planning, supply chain optimization, upskilling and workforce development."

The guide describes uses of AI during the construction project life cycle, including preconstruction, construction and building maintenance. It also provides definitions of terms, such as deep learning and predictive AI, as well as best practices in drafting office AI policies.

More information is available at abc.org/ai.