FM 1-29 revisited

by Mark S. Graham

In May, I summarized the revisions FM Global made to its Loss Prevention Data Sheet 1-29, "Roof Deck Securement and Above-Deck Roof Components," that became effective in January. (See "FM 1-29 updated," May issue, page 18.) On June 22, representatives of FM Global and FM Approvals conducted an online seminar called "FM Global Roofing Industry Forum" to explain their rationalizations for the changes. Following are some reasons provided by FM Global and FM Approvals.

FM Global

FM Global is a $4 billion property insurance company whose policyholders are some of the world's largest companies. FM Global primarily focuses on risk management through engineering that helps policyholders prevent, minimize and control property losses backed by an insurance company.

FM Approvals, a business unit of FM Global, is an independent product testing and certification company whose clients primarily are product manufacturers. FM Approvals certifies industrial and commercial products and services for loss prevention.

FM Global acknowledges its guidelines and recommendations are more conservative and may be more restrictive than applicable building code minimum requirements. The company indicates its policyholders demand a higher level of risk management and this higher level may not be appropriate for all buildings.

Hurricane losses

FM Global cites worldwide insured losses from natural disasters to be $53 billion in 2005 and $23 billion in 2004. These figures compare with losses of $20.5 billion for Hurricane Andrew in 1992 and $2.5 billion for Hurricane Floyd in 1999.

FM Global also indicates its property loss experience reveals about 70 percent of property losses are a result of human factors. It doesn't specifically define the term "human factors," but it is reasonable to assume this includes building owners' purchasing decisions, design decisions and applications that are inconsistent with FM Global's guidelines at the time of loss.

Poor workmanship is cited as being the root cause of a large number of FM Global's recent wind-related losses in the Caribbean and continental U.S.

Interestingly, for a large majority of FM Global's wind-related losses, the maximum observed wind speeds were less than design wind speeds.

Revising FM 1-29

When updating Loss Prevention Data Sheet 1-29, FM Global indicated it increased its recommended safety factor for design resistance loads to a minimum of 2.0. In the previous editions of FM 1-29, it used a safety factor as low as 1.7 at roof perimeters and corners.

FM Global says this safety factor accounts for defects in materials and workmanship, effects of aging on material strength and loads in excess of design wind loads. The increase of the minimum safety factor from 1.7 to 2.0 primarily is intended to add an additional margin of safety to address workmanship concerns.

Also, this safety factor is applied separately from and in addition to any pressure coefficients used to determine roof perimeter and corner pressures. ASCE 7, "Minimum Design Loads for Buildings and Other Structures," allows for the use of pressure coefficients of 1.7 and 2.5 when determining pressures on roof perimeters and corners, respectively, for low-slope roof assemblies.

Further revisions

FM Global has concerns with specifiers who overspecify FM's Class 1-90 rating where it may not be necessary. FM Global indicates most roof assemblies in nonhurricane prone areas (a majority of the U.S.) do not need a Class 1-90-rated roof assembly. For most enclosed buildings located in Ground Roughness B or C regions where the basic wind speed is 90 mph or less, Class 1-60 or 1-75 ratings are sufficient. In fact, a Class 1-90 or higher rating only will be necessary on tall buildings that usually do not use steel roof decks and in hurricane-prone regions.

The difference between Class 1-60 and 1-75 ratings and Class 1-90 and higher ratings is significant not only by magnitude but also because requirements for ratings exceeding Class 1-75 (Class 1-90 or higher) trigger the additional requirements outlined in FM 1-29 as described in my previous column.

FM Global indicates it intends to clarify this particular issue further in future editions of FM 1-29.

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