



## FM change has a catch

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Roofing/Siding/Insulation (RSI)



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On Feb. 17 FM Global released a revision of its Loss Prevention Data Sheet 1-29, titled "Roof Deck Securement and Above-Deck Roof Components." The revision expands the range of adhered systems that may use "prescriptive" methods for enhancing wind resistance in the perimeter and corner areas of a roofing system.

The following text is taken from the revised document:

*For all deck types, where roof covers are adhered to some combination of mechanically fastened insulation, cover board or thermal barriers, prescriptive enhancements may be used for securing the perimeter and corner areas as long as one of these conditions applies:*

- *The building is in a non-hurricane-prone region where the design wind speed does not exceed 90 mph and the roof height does not exceed 75 feet (23 meters). Note that the roof height is limited to 30 feet (9.1 meters) if the building is located in surface roughness exposure D (see DS 1-28), and the building is partially enclosed.*
- *The recommended field of roof rating needed per DS 1-28 does not exceed Class 1-75 (3.6 kilopascals [kPa]).*

*For either of the two situations, increase the number of fasteners per board over the FM-approved field of roof spacing by the following:*

- *50 percent minimum in the roof perimeter but at least one fastener per 2 square feet (0.19 square meters). It is not necessary to install fasteners closer than one per 1 square foot (0.09 square meters).*
- *One fastener per 1 square foot (0.09 square meters) in corner areas.*
- *Round up to the next whole number of fasteners, if necessary.*

*For areas where these criteria are exceeded, ensure the roof system used in the perimeter and corner areas is FM-approved for the specific wind rating recommended (see Table 1 on page 18). Alternatively, install either a mechanically attached single-ply membrane or a multi-ply roof cover with a mechanically attached base sheet in accordance with 2.2.7.2.*

This is a significant change. Prior to this revision, "adhered" systems requiring a 1-90 or greater approval had to have an actual FM-approved uplift rating for the perimeter and corner pressures listed in Table 1. For example, if a roofing system required 1-90 in the field of the roof, an adhered system needed an FM 1-150 rating in the calculated perimeter area and an FM 1-225 rating in the calculated corner area.

The revision allows prescriptive enhancements for corner and perimeter areas regardless of the FM field of roof rating as long as the building is not in a hurricane-prone region, the wind speed is less than 90 mph, and the roof height

does not exceed 75 feet.

However, it should be noted that using the parameters listed in these changes (wind speed of 90 mph or less and height of 75 feet or less) would almost always result in American Society of Civil Engineers (ASCE) calculations requiring less than 90 pounds per square foot (psf) uplift resistance. Therefore, the changes do not directly affect the structure's design requirements. FM appears to be allowing designers to continue using 1-90 as a design standard on structures that actually need less than 90 psf wind-uplift resistance in the field of the roof. Johns Manville recommends that designers make the required calculations and base their designs on actual requirements.

Wind field area classification (psf)	Minimum wind rating for FM-approved deck membrane assembly		
	Field area (psf)	Field perimeter area (psf)	Field corner area (psf)
15-30	30	30	150
30-45	45	45	225
45-60	60	60	300
60-75	75	75	375
75-90	90	90	450
90-105	105	105	525
105-120	120	120	600
120-135	135	135	675
135-150	150	150	750
150-165	165	165	825
165-180	180	180	900
180-195	195	195	975
195-210	210	210	1050
210-225	225	225	1125
225-240	240	240	1200
240-255	255	255	1275
255-270	270	270	1350

Table 1: Recommended rating of field, perimeter, and corner areas (zones 1, 2, and 3) for enclosed buildings

The second major change in the revised edition concerns the design of roofing systems installed over lightweight insulating concrete roof decks. Typically, one would attach a membrane to this type of deck by nailing a base sheet to the lightweight insulating concrete and mop or heat-weld an asphaltic membrane to the base sheet. Previously, FM allowed prescriptive methods of increasing the number of base sheet fasteners to meet perimeter and corner pressure requirements. The new edition now requires that in hurricane-prone regions the membrane be FM-approved for the specific wind pressures noted in Table 1.

The following text is taken from the revised document:

*When a lightweight insulating concrete (LWIC) roof assembly is to be used as part of a new roof or re-roof in non-hurricane-prone regions, ensure it is FM-approved for the specific wind pressure recommended in the field of the roof. Also ensure prescriptive enhancements provided by securing base sheets in the perimeter and corner areas are in accordance with recommendations. ... For regions prone to hurricanes, typhoons and tropical cyclones, ensure the entire LWIC system is FM-approved for the specific wind pressure rating needed for the field, perimeter and corner areas as noted in Table 1.*

Thus, if the design requirement is for 90 psf in the field of the roof and an adhered system to be used, a tested and FM-approved system meeting 150 psf must be used in the perimeter of the building and 225 psf must be used in the corners.

It is important to note that no manufacturer can provide a nailed base sheet system over lightweight insulating concrete poured over a metal deck that can meet the perimeter and corner requirements stated in this article.

The FM document can be obtained at FM's Web-based program, RoofNav, at [roofnav.fmglobal.com/roofnav/login.aspx](http://roofnav.fmglobal.com/roofnav/login.aspx).

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