



**TITLE:** Applying FM 1-52 in Practice

**DESIGNATION:** IIBEC TA-023-2022

**OBJECTIVE:** To provide background and discussion on the latest revisions to the FM Global Property Loss Prevention Data Sheet 1-52, *Field Verification of Roof Wind Uplift Resistance*, and its applicability to IIBEC members' practices in evaluating wind uplift resistance of installed roofs as well as evaluation of existing roofs for wind uplift resistance and wind damage.

## BACKGROUND

The most recent version of FM Global Property Loss Prevention Data Sheet 1-52, *Field Verification of Roof Wind Uplift Resistance*, (FM 1-52), interim revision dated July 2021,<sup>1</sup> indicates the following:

### “1.0 SCOPE

This data sheet describes two methods of field testing new installations of above-deck roofing assemblies to determine if there is adequate wind resistance. It also provides alternative visual construction observation guidelines. Confirmation of acceptable wind uplift resistance on completed roof systems is critical in tropical cyclone-prone regions. Field tests can be used to assess existing roofs for adequate wind resistance, **but not to determine the cause** [*emphasis added*] of wind uplift damage after a storm event. Field tests are not applicable to metal panel roofs (standing seam and through fastened), ballasted roofs, or mechanically fastened covers with fasteners spaced more than 2 ft (0.6 m) apart in either direction.

### “1.1 Changes

“**July 2021.** Interim revision. Updated the scope of this data sheet to clarify the intent of the document for existing situations. Also removed references to an incorrect FM Global form.”

FM 1-52 has been an accepted standard for testing installed roof assemblies in the field to determine the wind uplift pressure the roof assembly will resist. This standard has been used and accepted by many roof consultants for many years as an appropriate test standard for such purpose.

## DISCLAIMER

This Technical Advisory is intended to serve only as a general resource and to identify potential issues for consideration by industry professionals. Each person using this Technical Advisory is solely responsible for the evaluation of the Technical Advisory in light of the unique circumstances of any particular situation, must independently determine the applicability of such information, and assumes all risks in connection with the use of such information. The materials contained in this Technical Advisory do not supersede any code, rule, regulation, or legislation and are not intended to represent the standard of care in any jurisdiction.

Recent changes in the interim revised document dated July 2021 have caused confusion as to the applicability of this standard. As stated in the revision to the FM 1-52's scope above: "Field tests can be used to assess existing roofs for adequate wind resistance, but not to determine the cause [*emphasis added*] of wind uplift damage after a storm event" The definition of "cause" is a person or thing that gives rise to an action, to make happen.

As the first sentence of the scope states, the field test can be used to assess existing roofs for wind uplift resistance. The test is often used after a new roof is completed to verify the installed system meets the specified uplift resistance. It can also be used to evaluate a roof that was previously installed when the uplift resistance is questioned or unknown.

While the standard is not to be used "to determine the cause of wind uplift damage after a storm event [*emphasis added*]" there is no restriction on the use of the standard in an evaluation of an existing roof that has sustained wind damage or where wind damage is suspected. As an example, the test method can be used to determine if the remaining and seemingly undamaged portions of the roof have sufficient wind uplift resistance to remain in service, or if suspected areas of roof have concealed damage that has diminished the wind uplift resistance of the roofing system and should be addressed. The reader should be cautioned that the wind uplift resistance pressure of an in-situ roofing system is only one of many factors that can be used in evaluating wind uplift damage. An article written by Giffin and Brown provides a guide to evaluating roof systems.<sup>2</sup>

## SUMMARY

When evaluating a roof system for wind damage, the test procedure outlined in FM 1-52 can be, and is often, helpful as a tool to evaluate the existing roof system but does not determine the cause of failure. The cause of a failure is determined by skilled professionals through proper investigation; interpretation of data such as original design, roof and wall conditions, storm conditions, building geometry, site conditions, roof or building maintenance records, leak histories, attachment of roof components, material suitability and condition, non-destructive or destructive test results of individual components and assemblies; and other relevant information. An uplift test of the in-situ roofing system is only one factor to be considered during an assessment and should not be relied on as a pass/fail criterion when assessing a storm damaged roof. The test may be helpful in delineating areas of the roof that are not damaged and may be salvageable.

## REFERENCES

1. FM Global. 2021. *Field Verification of Roof Wind Uplift Resistance*. FM Global Property Loss Prevention Data Sheet 1-52, Norwood, MA: FM Global.
2. Giffin, Christopher W., and James M. Brown. 2009. "Evaluating Storm Damage to Flat-Roof Assemblies." *Proceedings of the RCI 24th International Convention*. Raleigh, NC: RCI.