Understanding Tornado Loads and Product Approval

TECH CORNER

DAVE MONSOUR

Editor's note:
In this installment of the Tech Corner, DASMA Technical Director Dave Monsour answers questions about the new provisions in building codes related to tornadoes and how they apply to product approval.

By now many of you have gotten wind of the new tornado loads adopted into ASCE 7-22 and referenced, among other places, in the 2024 International Building Code (IBC) and the 2023 Florida Building Code (FBC). A common concern is how do these new tornado requirements affect existing ratings and approvals?

Q: I am updating my Florida Product Approval for the new 2023 Florida Building Code, 8th Edition. How do I know if I meet the new tornado requirements?

For sectional doors and rolling doors, your product approval is not affected by the new tornado load requirements. Your approval verifies a rated wind load regardless of the source of that wind.

A formula that may help is "Rated Wind Load must be greater than or equal to the Required Wind Load." Think of it this way — the new tornado loads pertain to one side of the equation (the required load) and your Product Approval deals with the other side of the equation (the rated load).

Q: So the tornado loads may increase the required load?

Yes, although this is very unlikely in Florida where hurricane requirements are so high. But even if the required rating changes it does not affect your actual rating, which is reflected in your Product Approval. The worst that could happen is that your Product Approval will be inapplicable for certain projects (again, very unlikely in Florida).

Q: But what about the windborne debris requirements and impact-resistant ratings? I heard these are different for tornadoes.

Not true; the requirements are the same. Architects and building designers are responsible for determining whether impact resistance is required for a particular job. They base this determination chiefly on geographic location and Risk Category.

Door manufacturers are responsible for determining whether their products meet the impact resistance criteria.

Door manufacturers are responsible for determining whether their products meet the impact resistance criteria.

The criteria is the same for hurricanes, tornadoes, and any other type of storm and can be found in ANSI/DASMA 115 (a test standard for missile impact, which is referenced in ASCE 7, the IBC, and the FBC) and is publicly available on the DASMA website: ANSI/DASMA 115.

Q: I was told that the tornado impact test requires a much bigger missile. Does the missile weigh 15 pounds? Is it shot out of a cannon at two to three times the speed of the regular wind load impact test?

You must be thinking about tornado shelters. Those are a completely different matter. Tornado shelters and hurricane shelters are very special types of buildings that afford an extremely high level of protection from storms.

Exterior doors in storm shelters need to be tested and approved to the ICC 500 *Standard for the Design and Construction of Storm Shelters*. Ratings for ICC 500 require a much more stringent set of criteria, including more difficult impact tests. You should not provide an exterior door for a storm shelter unless it has the proper ICC 500 rating.

Storm shelter requirements in the 2024 IBC are not new; they were introduced in 2009. What is new in the 2024 IBC is that for Risk Categories III and IV exterior doors on **all buildings** (not just storm shelters) need to meet wind load requirements **or** tornado load requirements (whichever results in a higher design pressure).

Contact us

If you have questions about this topic or suggestions for future content, please email Dave Monsour at dasma@dasma.com. ■