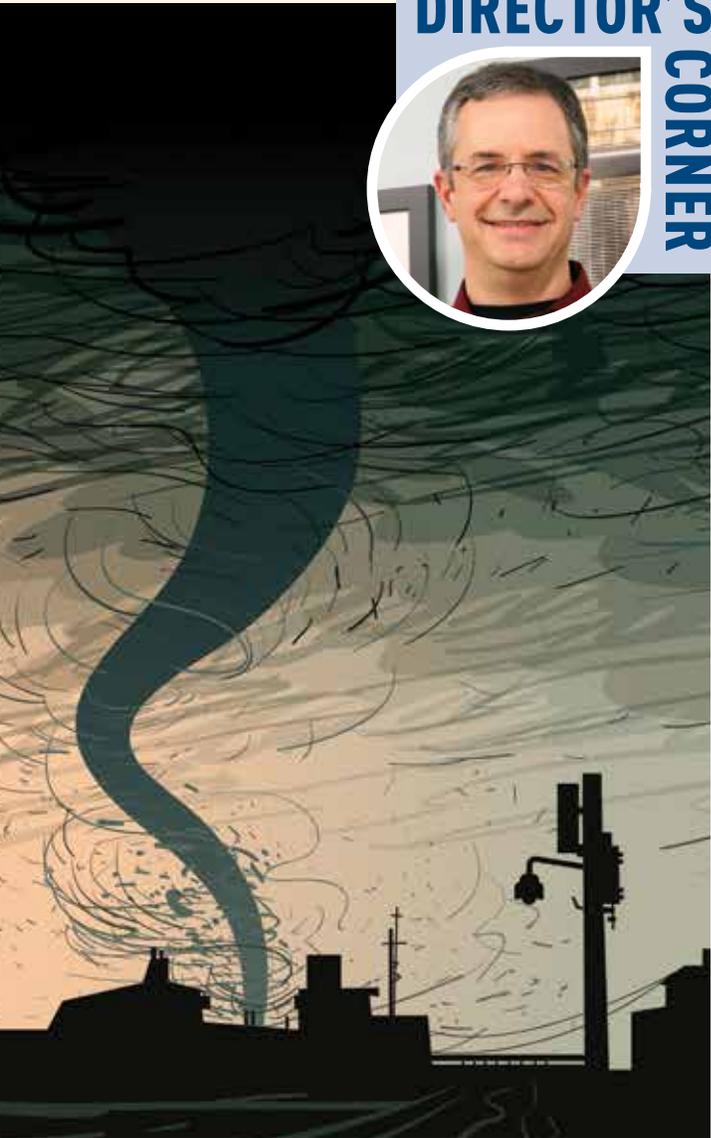


DIRECTOR'S CORNER



“90% of tornadoes are EF0 or EF1, and most of the damage done by the more powerful EF4 and EF5 tornadoes is done by “edge” or peripheral winds, that, while less strong than the peak winds, cover a much wider area.”

Dave Monsour,
DASMA Technical Director

Tornado loads? Seriously?

Editor's note:

In this edition of the Director's Corner, Dave Monsour answers your questions concerning the new tornado design load requirements.

Q: Does the recently released ASCE/SEI 7-22 Minimum Design Loads and Associated Criteria for Buildings and Other Structures include a new chapter on tornadoes?

A: Yes, Chapter 32.

Q: Tornadoes are so rare, why bother? They're so powerful. Can buildings and doors really be made to resist them? Why do we need this?

A: That sort of thinking no longer prevails. Take a guess at how many tornadoes are *reported* in the United States each year and how many deaths are attributed to these disasters. [See the answers at the end of this article. Hint: The number of deaths is more than what's reported for earthquakes and hurricanes combined.]

As for design strength, the members of ASCE took a commonsense approach. The goal was not to try and solve every problem associated with tornadoes, only the most common ones. For example, 90% of tornadoes are EF0 or EF1, and most of the damage done by the more powerful EF4 and EF5 tornadoes is done by “edge” or peripheral winds, that, while less strong than the peak winds, cover a much wider area.

Q: Will these tornado requirements get into the building codes?

A: They are on track to be adopted into the 2024 International Building Code.

Q: Is this the first time tornadoes are being considered in design requirements for buildings?

A: The city of Moore, Oklahoma pioneered the consideration of tornado loads in 2014, less than a year after a devastating tornado hit the city in May 2013. They passed a law raising their basic wind speed requirement from 90 mph to 135 mph. See DASMA Technical Data Sheet 191 for more information.

Q: Are our customers going to start asking for EF4 and EF5 doors?

A: Well, they shouldn't. Tornado loads will be handled just like other wind loads. There are tornado maps and tornado calculations that parallel what has been done for decades with wind loads.

Q: Is this going to add another layer of complexity to the door business? Will we need to add tornado doors to our line of wind load products?

A: No. Tornado loads are still wind loads; think of them as a new subset of the “same old” category. Door dealers and manufacturers should get requests for products that meet specified design wind pressures, with or without impact-resistance.

As always, it is up to the architects and engineers-of-record for the structure to determine the required design pressure. They will need to compare tornadic and nontornadic wind loads and determine which is higher; it will be either-or, not both.

ASCE provides a useful tool for designers to determine the required loads known as the ASCE Hazard Tool, which now includes tornadoes: <https://asce7hazardtool.online/>. Also, look for additional resources and information from DASMA as ASCE 7-22 gets closer to implementation.

NOTE: On average, per year, there are over 1200 reported tornadoes in the U.S. and over 90 deaths. ■