DIRECTOR'S CORNER

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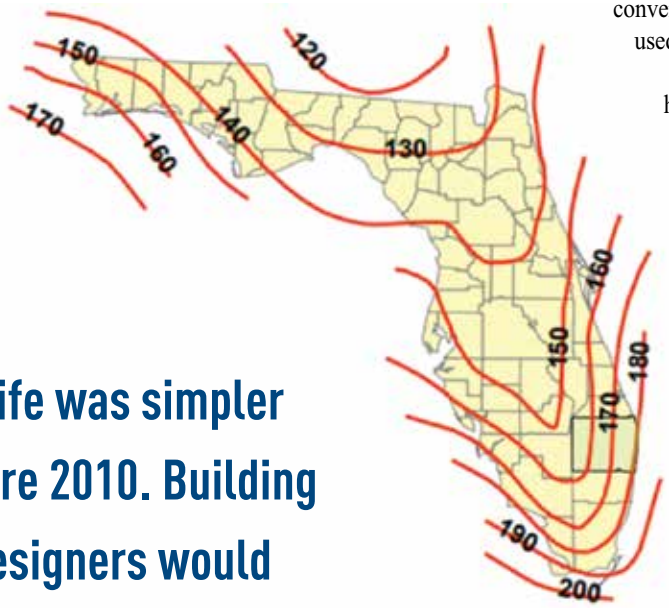

"Life was simpler before 2010. Building designers would determine wind load requirements and door manufacturers provided products to meet those requirements."

Look out for LRFD

Life was simpler before 2010. Building designers would determine wind load requirements and door manufacturers provided products to meet those requirements. "Rated loads ≥ required loads" was the simple equation that kept building designers and door professionals on the same page.

Wind load equation changes

Then came the 2010 publication of ASCE 7-10, "Minimum Design Loads for Buildings and Other Structures." It was merely a periodic update to an old standard, but it revolutionized the building designer's half of the wind load equation (the "required loads"). Wind loads have not been the same since, as subsequent editions of ASCE 7 have maintained the basic-10 approach.

Wind load conversion

With ASCE 7-10, our eyes grew wide when we saw maps with speeds upwards of 150 to 200 mph. We were instructed not to worry, and that "after we inflate the loads based on these higher speeds, we'll apply a conversion factor to bring them back down to the levels you are used to."

This method gave the appearance that load requirements had skyrocketed and then mysteriously came back down to earth. You may be thinking that only engineers could come up with an idea like that, and I wouldn't blame you.

The higher speed maps are based on LRFD, which stands for "Load and Resistance Factor Design," a.k.a. "Strength Design." LRFD is simply one of two equally valid, standard methods for determining required loads. The other is ASD, "Allowable Stress Design." LRFD is more of a "worst case" approach, and ASD is more of a "service level" approach.

Wind load testing

With ASCE 7-10, LRFD became the default method for wind loads. As long as the conversion factor is applied and the final requirement is the (lower) ASD load, all is well. The ASD method is how we test and rate most of our products. Hence, door manufacturers expect the requirements to reflect ASD loads; in most cases, they do. When they don't, look out! If left uncorrected, LRFD can lead to requirements 67% higher (1/0.6).

Fortunately, LRFD is convertible to ASD. Here is a simple formula that may help you: ASD = 0.6x LRFD. That's right! ASD wind loads are only 60% of LRFD (refer to Equation 16-33 in the International Building Code). If you suspect the load requirements on a given job are inflated, you may want to check to make sure they are not LRFD or "Strength Design" loads.

For more information on the 0.6 multiplier, see DASMA TDS #155s, 155v, 155x, and 168 (Q&A #22).

Contact us

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