

Letters

What Are Better in Wind Zones, Attached or Detached Garages?

I found the article on tornado damage fascinating (“In the Path of the Storm,” 9/11). Among other things, I was amazed to see that Alabama apparently has a lax building code when it comes to mechanical fasteners. I am curious what the author thinks about attached garages, since he pointed out several houses where the damage seemed to be blamed on the large garage door. Does he think garages should not be attached? Or, if they are, what should be done to prevent such damage to the adjoining house?

Rider Sporn

Blue Mounds, Wis.

Author Bryan Readling responds: Garages are indeed vulnerable to high-wind forces because they have large openings with weak coverings — typically overhead doors — and are often built with less structural redundancy. However, in my view, the decision whether to build a garage attached or detached should not be governed by wind design, since either type can be built with the same level of structural capacity.

Some might consider attached garages better because they can rely on the house’s framing for bracing and support; on the other hand, failure of a marginally built attached garage can initiate failure of the rest of the building. In that case, a detached garage might have been better since it can be lost without affecting the home. But to build a survivable detached garage may be more expensive, given that you’ve got a separate foundation, separate electrical service, and so forth.

It’s best to make the decision based on the house and site plans, but always use a wind-rated door and adequate load-path provisions in either case.

High-Wind Protection Down Under

Bryan Readling’s article “In the Path of the Storm” (9/11) clearly demonstrates that framing connections failed because they were unsuitable to resist high winds.

Unfortunately, the article emphasizes the increased expense of structural upgrades rather than the high cost of damage to underbuilt houses. Also, the reference to the “prescriptive recommendations” by APA is misleading; the disclaimer at the bottom of the APA document “Building for High Wind Resistance in Light-Frame Wood Construction” says that it is “intended to provide tips for improving tornado resistance of light-frame wood construction,” but the “tips” given would not bring a wood frame and its connections to a standard that would prevent the damage portrayed in the article.

To provide the proper wind design, you have to know the uplift load on the building and its wind zone. Only then can you determine tie-down requirements for each structural joint in the floor, wall, and roof framing; which grade of lumber to use; and the correct roof covering.

Here in Australia, two of our staple tie-down products are standard threaded rod and 30 x 0.8 millimeter galvanized steel strapping, commonly referred to as “hoop iron.” Manufactured metal connectors are also used, but if cost is a consideration, then hoop iron and threaded rod are the best bang for the buck. A length of hoop iron looped over the top of a rafter passed down and under the top plate and returned up to the internal edge has an uplift capacity of 2,922 pounds — greater than that of many common metal ties. A ½-inch threaded rod cast into concrete with 50 x 50 x 3.0 millimeter washers would have an uplift capacity of 3,597 pounds when connected to hem-fir and 4,496 pounds with Doug fir.

Dave Barrowcliffe

Maryborough, Queensland, Australia

Bryan Readling responds: APA’s recommendations are not intended to make buildings tornado-proof, as the letter suggests, but to improve performance at the least cost — which unfortunately does have to be taken into account. The fact is that the additional costs of structural enhancements are not easy to justify if financial payback is considered, given that the probability of getting hit by a tornado is around 1 in 5,000 for a given house in a given year. While many U.S. homes are carefully crafted using the kinds of details described, many — perhaps most — are not. It’s a logical, economical first step to encourage the use of structural wall sheathing to handle uplift and impact loads, and there’s plenty of evidence, some of which is in my article, that the technique provides protection in many cases.

KEEP 'EM COMING!

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