

Garage Door Recommendations

Q: Our remodeling clients often point us to literature that recommends ways to reinforce garage doors. These references from various agencies typically recommend reinforcing the panel with strongbacks and then replacing, or otherwise changing, the counterbalance. This seems awkward and not very practical. What should we recommend to our clients?

A: According to engineer Mark Westerfield, manager of Product Development and Engineering for Clopay Building Products Co., garage doors proved to be a major weak link in the 2004 hurricane season. Unreinforced garage doors suffered significant damage, or were blown out completely, leading to further destruction of building structure and home interiors.

While Westerfield says remodelers are wise to focus their attention on existing garage doors, he does not recommend retrofitting a garage door to wind-load requirements for several reasons:

For starters, the door sections often require additional vertical mullions (called “stiles” in the garage door industry) as well as additional horizontal reinforcement that will change the “springing weight” of the doors. When the springing weight is

changed, the springs must be changed. This is work for a professional garage door installer, given the high tension stresses on the springs and special tools involved. More often than not, the track, track attachments, hinges, and rollers also need to be upgraded to properly transmit the loads from the door to the building. These heavier-gauge tracks, hinges, and rollers may not be obvious to someone unless they are following detailed instructions or drawings, or unless they have been trained for garage door installation in these high-wind-load areas. So, while it’s possible to retrofit a garage door, it’s not a simple fix.

Far better would be to replace an existing unreinforced garage door with a newer code-compliant door. There is plenty of evidence to suggest that these



Got a question?

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Shingle Specifics

Q: How well do “impact resistant” shingles hold up against wind-borne debris from a hurricane? It seems hard to believe a composition shingle could resist the missile tests that windows, skylights, and doors must withstand.



FEMA PHOTO/MARK WOLFE

GARAGE DOOR REPORT

The garage door proved to be a major weak link in the structural integrity of coastal homes in 2004. Evidence suggests that reinforcing existing garage doors may not be as effective as installing a garage door designed and tested to resist high wind loads and impact.

withstood hurricane-force winds and stayed in place better than retrofit doors. While more expensive than a retrofit, the difference may not be that significant if the retrofit is truly done properly.

Code-compliant doors can be located using the Product Search from the Florida Department of Community Affairs Building Code Information System at www.floridabuilding.org/pr/pr_srch.asp, or the Product Evaluation Index of the Texas Windstorm Inspection Program at www.tdi.state.tx.us/company/wind/prod/index.html.

These doors essentially fall into three categories, correlating to the three general wind zones identified by the Florida and the Texas Gulf Coast wind codes. The wind-loading requirements, which are based on wind speed, exposure, building geometry, and other factors per the American Society of Civil Engineers Standard 7 (ASCE 7), are calculated the same way in all three zones. However, the impact requirements are different for each of three zones.

The first, and most stringent zone, is the “High Velocity Hurricane Zone” (HVHZ), defined as all of Miami-Dade and Broward Counties (called the “Seaward Zone” in Texas). In the HVHZ, the entire building product must be impact resistant (glazed or solid). For the most part, this eliminates glazing (windows) in garage doors, but there are several solid garage doors that meet this impact requirement. There is a series of Miami-Dade test protocols that are called out for in the HVHZ, including TAS 201, 202, and 203.

The second zone is called the “Wind-Borne Debris Region” (or “Inland I” in Texas). For new doors in this region, only the glazing must be impact resistant, but for replacement doors, any glazing (at least in Florida) is not required to be impact resistant if the home was built before 2002.

In the interior of the state (or “Inland II” in Texas), garage doors need to meet wind-load requirements but not any impact requirements. The wind-load test (called the “static air pressure test”) is performed per ASTM Standard E330 (and its garage door industry-related test Standard DASMA 108).

For any garage door in a high-wind area, keep in mind that the door is not the only place to focus. The mounting jambs and supporting structure need to be looked at, too, to make sure these elements are strong enough to transmit the wind loads.

A: You’re right that in a hurricane market the term “impact resistance” can be misleading. When it refers to a composition shingle, impact resistance (IR) designates a shingle that is designed to withstand hail, not wind-borne debris. Hail accounts for serious roof damage in many states, but according to insurance industry reports, the damage is the most severe in Texas, Kansas, Oklahoma, and Nebraska.

While hail resistance is not specifically intended for coastal markets, many shingle makers design their wind-resistant shingles to pass the UL 2218 test, and market

the same shingle as a “storm class” product. However, wind resistance and hail resistance are measured under separate tests and apply to separate markets.

Hail-resistant composition shingles are tested against the UL 2218 standard, which evaluates the damage caused by steel balls of various diameters dropped from different heights in an attempt to mimic the effects of hail. The results — measured by the damage to the shingle mat and the loss of surface granules — are used to classify shingles: Class 1 shingles are the least resistant

continued on page 3

continued from page 2

and Class 4 the most resistant. To meet the stringent Class 4 standard, shingle makers use a softer SBS (styrene butadiene styrene) modified asphalt to absorb impact without fracturing the shingle, or a fiberglass mat to distribute the impact load, or a combination of both. In general, hail-resistant shingles tend to be among the heaviest, and costliest, composition shingles available.

Wind resistance, on the other hand, is tested using ASTM Standard D3161 (recently modified to 110 mph). In this case, the test measures the shingle's resistance to uplift, and the focus is not necessarily on the weight or thickness of the shingle but instead on the quality of the sealant that sticks down the tabs. Most manufacturers also require a 6-nail pattern for fastening the wind-resistant shingles. Nail placement is critical to maximize the chemical adhesion between overlapping shingles, as well as to secure shingles to the roof deck in high winds.

Coastal contractors are better served by such a wind-



ATLAS ROOFING

SHINGLE RESISTANCE

Class 4 asphalt shingles, such as these Atlas StormMasters, are rated to resist hail impact, not wind-borne debris. Shingles designated "impact resistant" are most useful in inland regions prone to heavy hail. However, this shingle is also wind rated up to 110 mph under a separate testing standard, making the very same shingle a good choice for a coastal home as well as for a midwestern home.

rated composition shingle. While wind resistance is the main feature, the heavy mat will also help deflect some of the lighter debris that gets kicked around by hurricane-force winds. But understand that it's the sheathing that will best resist the larger impacts, not the shingles.

Top Finishes

Q: ■ What is the best finish for the cedar shakes on a coastal home that is exposed to strong sun and lots of fine salt spray?

A: *Mike Guertin, a Rhode Island home builder and remodeler, responds:* I prefer stain finishes to paint on cedar shingles. Stains penetrate the wood fibers rather than coating the surface. They are usually non-film-forming, so they won't crack, chip, and peel under punishing coastal conditions. The best finishes for cedar shingles are factory-applied. A factory coating seals all sides and edges much better than merely surface-applying a finish, and the controlled application and oven drying in a factory far exceed the quality you can achieve in the field. Even considering the premium price for prefinished shingles, they are very cost effective when you factor in the price of labor. I typically use Maibec (www.maibec.com; 800-363-1930) white cedar shingles. They are available with one or two coats of stain and have 5- and 15-year warranties, respectively. If you are field-applying a finish to natural shingles

already on the wall, use latex stain on white cedar shingles and oil-based stain on red cedar to avoid extractive bleeding. I recommend two spray-applied and back-brushed coats to ensure an even finish is worked into the shingle exposure, butts, and edges.

Recoating is best done just as the finish begins to show wear. A simple wash to remove salt spray, dirt, and any mildew is all the preparation needed for a recoat. The topcoat can be spray- or brush-applied.

STRONG FINISH

To get the best finishes for cedar shingles, use a factory-coated shingle. This finish seals much more effectively than any surface-applied finish.



KARL'S CEDAR SHINGLES