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BLUEPRINT FOR SAFETY NEWS

W H A T T O D O A B O U T

Windstorms

A blustery fall wind that scatters golden leaves. The tinkling of wind chimes on a cool spring morning. A warm summer breeze blowing across a crystal blue ocean. Wind is a soothing and beneficial natural force we experience almost every day. But it can also turn menacing, wreaking havoc in our communities and lives.

Windstorm is a broad term used to describe those occasions when wind turns fierce. Common types of windstorms include:

- ⊙ **Tropical storms such as hurricanes;**
- ⊙ **Extra-tropical storms such as Nor'easters;**
- ⊙ **Tornadoes;**
- ⊙ **Thunderstorms, which can include straight-line winds;**
- ⊙ **Mountain windstorms.**

What type of windstorm you and your home are most susceptible to depends upon where you live. Coastal areas can be especially vulnerable to either tropical or extra-tropical storms, while parts of the Midwest are known for experiencing frequent, strong tornadoes. Just about every part of the country gets its share of thunderstorms, while mountain windstorms occur down slope.

People have been studying windstorms for a long time in an effort to determine how to build homes that better resist damaging winds. What has been learned is that your home's roof, wall-to-roof connections, and openings (windows and doors) are key areas that can be significantly strengthened against windstorms.

For keeping your roof on, your priority should be to ensure your home's roof covering (shingles or tile) is properly attached to the roof deck, which in turn must be properly attached to the roof's structure (trusses or rafters), which must in turn be securely attached to the walls, which must be securely attached to the foundation. In short, start from the top of your home and work your way down.

When it comes to protecting your home's openings from windborne debris, your options are to protect them with impact-resistant coverings such as shutters, or install impact-resistant windows and doors.

Inside this newsletter are seven specific steps you can take to strengthen your home against windstorms. Some of the steps, especially those involving the roof, should be done as part of new construction or when you are replacing your roof. Others can usually be done to your existing home at any time.

And, speaking of time, now is the best time to learn what you can do before the next windstorm strikes. Just turn the page to get started. →



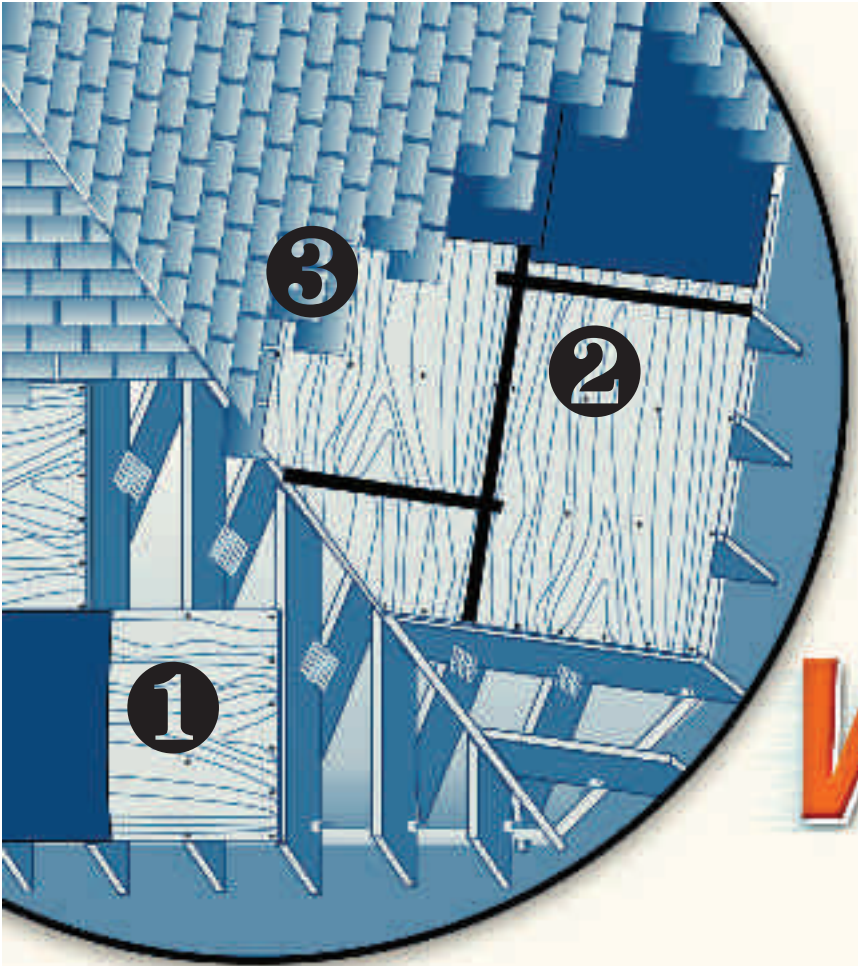
Expert Advice Is Just A Phone Call Away

By Leslie Chapman-Henderson, President & CEO, Federal Alliance for Safe Homes, Inc. (FLASH®)

Here at FLASH, we are dedicated to providing you with fast and easy access to the critical information you need to strengthen your home against disasters such as windstorms, wildfire and more. Our toolbox includes printed resources, such as *Blueprint for Safety News*, as well as our information-rich website at www.flash.org. But what if you have specific questions that aren't answered on our site, or what if you need advice about talking to your builder about building your home stronger? You're still in luck! FLASH has a toll-free helpline where you can have access to experts, such as construction engineers, who are happy to help you take steps towards building your home stronger or retrofitting your existing home. Our committed team is only a phone call away at (877) 221-SAFE. If you're more comfortable with computers, you can email us at flash@flash.org. Whether by phone or the Internet, we are standing by and ready to help you on your path to a stronger, safer and better-built home.



CEO'S CORNER



STEPS TO A *Wind-Resistant* HOME

1. Roof Deck Attachment

The techniques described in this and the next two steps should be used during roof installation on both new and existing homes, and are best performed by a licensed, professional roofing contractor.

- For new construction, install a roof deck of 5/8-inch thick plywood with 8 penny ring shank nails spaced 6 inches along the panel edges and every 6 inches in the field of the panel. Make sure the nails penetrated the decking directly into the roof framing.
- Look in the attic to confirm the roof decking is properly nailed to the roof framing. If you can see nails along the sides of rafters or trusses, where the nail penetrates the decking, your roof deck may not be securely attached.

2. Secondary Water Barrier

Even though roof coverings are somewhat wind resistant, a secondary water barrier provides protection if the covering is damaged or blown off.

- Create a secondary water barrier by installing self-adhering flashing tape or modified polymer bitumen strips on top of the joints in your roof deck. This will help keep out the rain in the event the roof covering is damaged or destroyed by severe weather.
- Install one layer of 30# underlayment – sometimes called felt paper – over the roof decking and secondary water barrier. The felt helps with drainage in the event water gets under the roof covering.

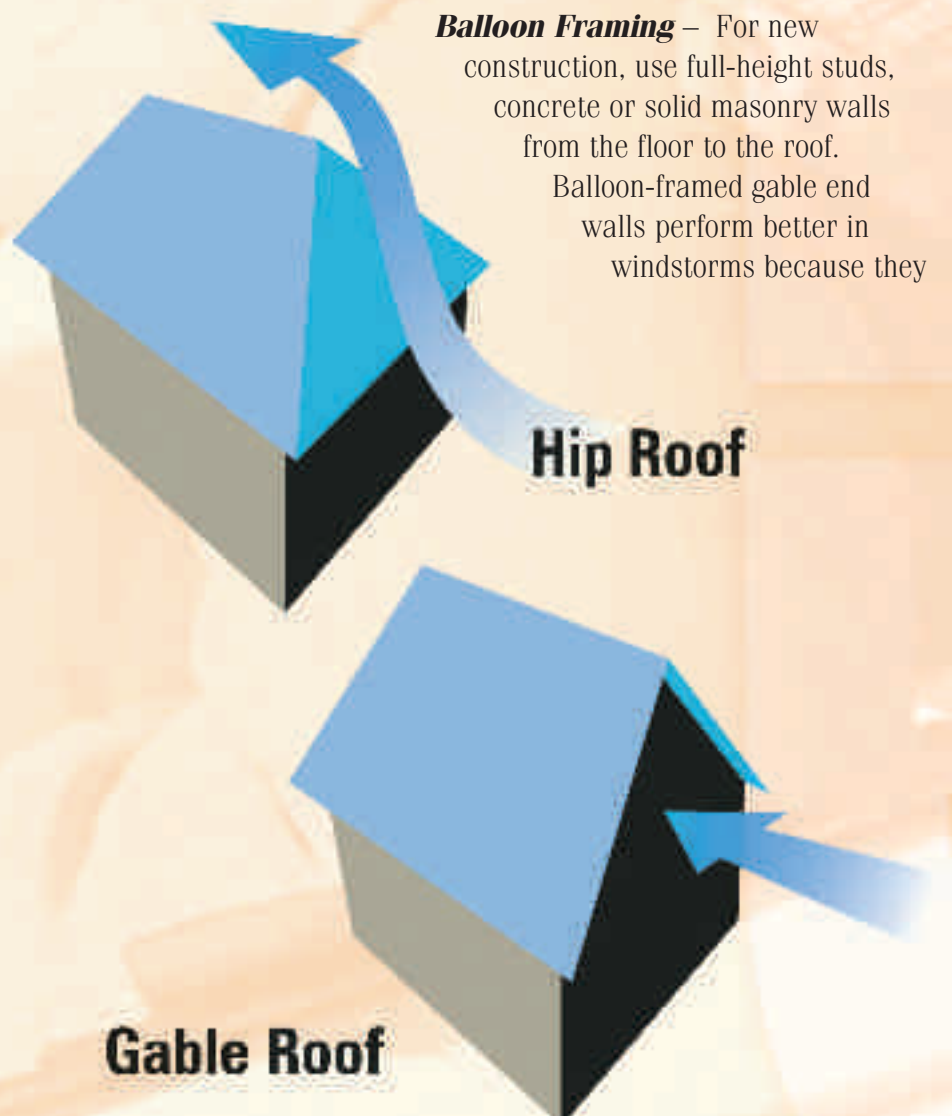
3. Roof Covering

- Install a roof covering that has been tested to the latest standards for wind and hail resistance. These standards are: ASTM D 3161 (modified to 110 mph), ASTM D 7158 or UL 2390 for wind resistance and UL 2218 for impact resistance.
- Be sure to specify these standards and look for labels on the products confirming these standards because ordinary roofing materials may not look any different from the wind-resistant versions.

4. Gable End Bracing

The type and shape of your home's roof can influence how well the roof will withstand high winds. Wind pressure on a hip shaped roof is lower than the wind pressure on a gable shaped roof in the same storm. Homes with unbraced gable end walls are more likely to suffer damage, such as collapse of the end wall from high winds. For gable end wall construction, use one of the following techniques:

- **Continuous Wall Construction or Balloon Framing** – For new construction, use full-height studs, concrete or solid masonry walls from the floor to the roof. Balloon-framed gable end walls perform better in windstorms because they



Safe Rooms Save Lives

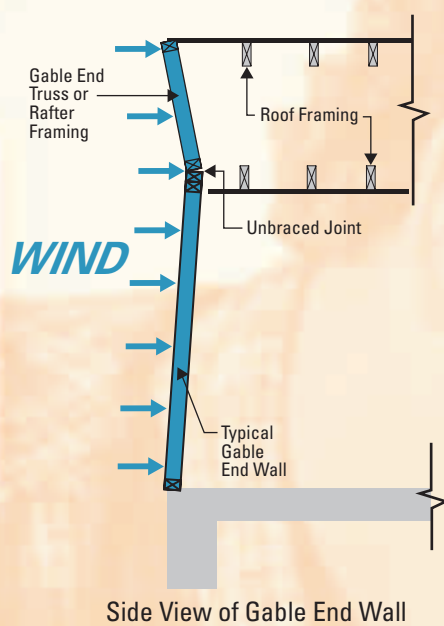
You can protect your family from injury caused by the high winds and flying debris of a windstorm by constructing or installing a safe room in your home.

A safe room is different from the other rooms in your home because it has been specially designed and tested to withstand wind speeds of up to 250 miles per hour and the impact of a 15 pound 2 by 4 flying at a speed of 100 miles per hour.

To watch an animation about safe rooms, visit www.flash.org, click the *Tornado* tab on the left hand side of the homepage, and look for *Animated How-To: Safe Rooms*. Also, visit the National Storm Shelter Association website at www.nssa.cc

do not have the hinge that usually exists where the triangular part of the gable sits on top of the wall below. Homes with high, cathedral-style ceilings should be balloon framed or will require a special design by a registered architect or licensed engineer.

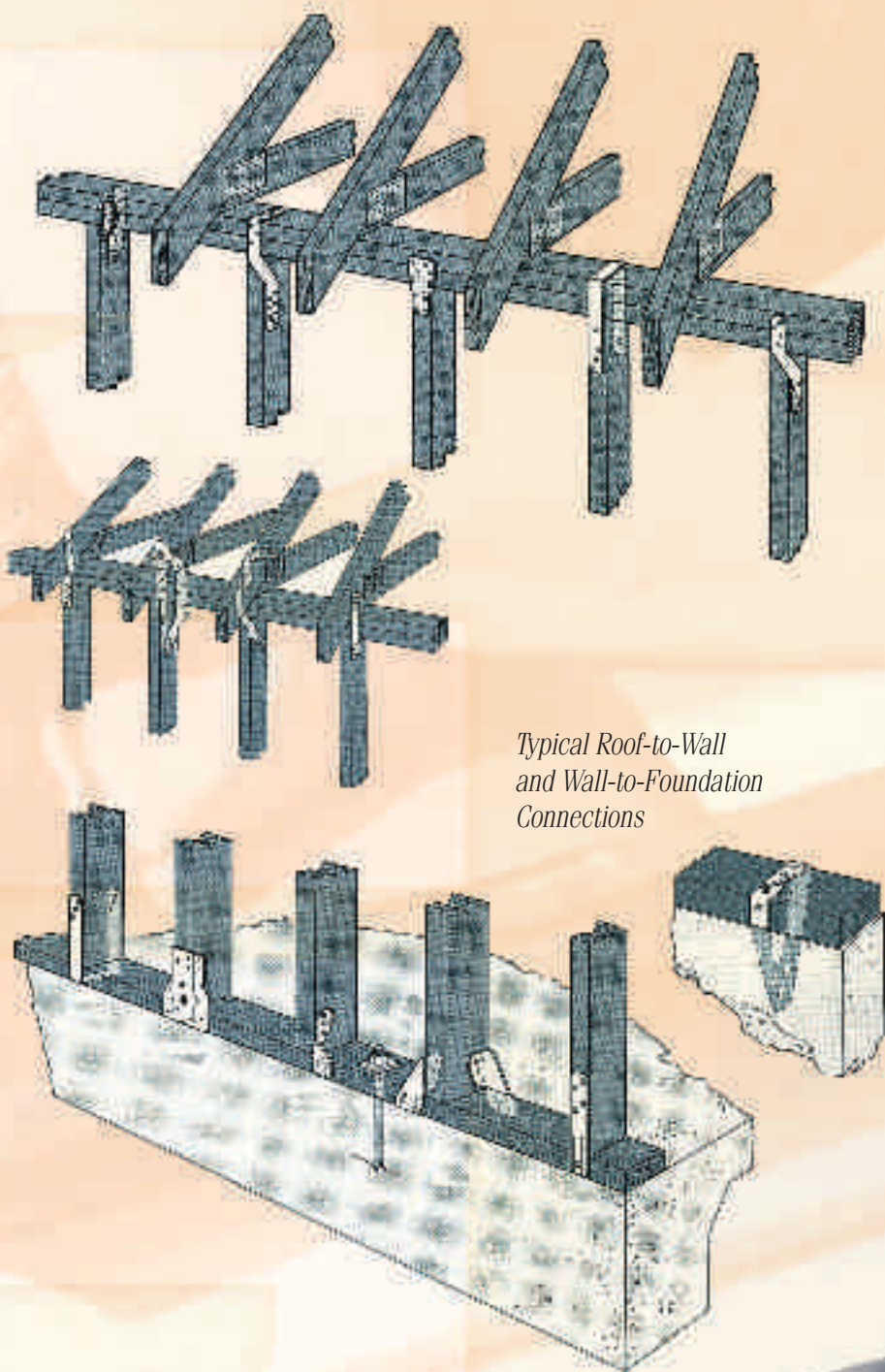
- **Platform Framing** – Brace the intersection of the gable end and the end wall. This intersection is a particularly weak point and those that are not properly braced can collapse, causing major damage, allowing wind and wind-driven rain into the home. In homes with attics, an attic floor or ceiling diaphragm with the proper bracing techniques can be used to provide the lateral support of the gable end wall if the end wall is NOT framed full height.



Side View of Gable End Wall

5. Foundation-to-Wall-to-Roof Connections

Your home's ability to resist the extreme force of wind is only as strong as its weakest link, so the only way to create a wind-resistant home is to secure all connections – foundation to wall, and wall to roof. To make sure the roof stays in place when severe winds blow, securely anchor the roof to the wall by installing hurricane straps or clips on each rafter or truss where they meet the exterior walls. Be sure to install all connectors following manufacturer's specifications.



Typical Roof-to-Wall and Wall-to-Foundation Connections

TALK TO AN EXPERT!

Have questions about any of the home-strengthening techniques discussed in this newsletter? Call us toll-free at 1-877-221-SAFE. Or, if you're more comfortable with computers, email us at flash@flash.org.

6. Protecting Openings

You can protect your home's openings, such as windows and doors, from windborne debris by installing impact-resistant windows and doors or installing impact-resistant coverings, such as shutters, over windows and doors. Impact-resistant glass and shutters are specifically designed to meet a combination of impact and continuous pressure from wind. Always use products that have been tested and approved to one of these standards and have been designated as such through a recognized product approval system or evaluation report: SSTD12; ASTM E 1886 and ASTM E 1996; or Miami-Dade Protocols TAS 201, TAS 202, TAS 203.



Equally important as the strength of the glass or shutter is the strength of the window's frame and attachment hardware. Impact-resistant units are tested as a unit that includes the glass, the frame, as well as the attachment hardware and the installation method. Impact-resistant windows and shutters should always be installed following manufacturer's recommendations.

7. Garage Doors

Garage doors are particularly vulnerable to high winds because of the long span of opening they cover and the relatively lightweight material they are made of. Two options are available for strengthening garage doors:

- Replace the door and track with a system designed to withstand high winds and windborne debris, or
- Protect the garage door with a tested and approved impact-resistant covering.

Online Windstorm Resources

Federal Alliance for Safe Homes, Inc. (FLASH®)
www.flash.org

Federal Emergency Management Agency
www.fema.gov

National Hurricane Center
www.nhc.noaa.gov

National Storm Shelter Association
www.nssa.cc

National Weather Service
www.nws.noaa.gov

Texas Tech University Wind Science and Engineering Research Center
www.wind.ttu.edu

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Travelers
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The Home Depot
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REGIONAL PARTNERS

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Rocky Mountain Insurance Information Association
Southwestern Insurance Information Service
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Arkansas Department of Insurance
Building Officials Association of Florida
California Earthquake Authority
Citizens Property Insurance Corporation
Disaster Contractors Network
Florida Department of Community Affairs
Florida Department of Environmental Protection
Florida Department of Financial Services
Florida Division of Emergency Management
Florida Division of Forestry
Florida Emergency Preparedness Association
Florida Fire Chiefs Association
Florida Highway Patrol
Florida Insurance Council
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Georgia Emergency Management Agency
Independent Insurance Agents and Brokers of South Carolina
Independent Insurance Agents of Texas
Insurance Council of Texas
Kentucky Division of Emergency Management
Kentucky Office of Insurance
Kentucky Weather Preparedness Committee
New Jersey Office of Emergency Management
New York State Insurance Department
North Carolina Department of Insurance
South Carolina Department of Insurance
Tennessee Department of Commerce and Insurance
Texas Department of Insurance
Texas Department of Public Safety
Travelers of Florida
Virginia Bureau of Insurance
Virginia Department of Emergency Management
Volunteer Florida
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COMMUNITY PARTNERS

Brevard Prepares
City of Anderson, Indiana
City of Deerfield Beach, Florida
Duval Prepares
Hernando County Emergency Management
Hillsborough County Office of Emergency Management
Home Builders Association of Greater Dallas
Miami-Dade Emergency Management
Tulsa Partners
Volusia Prepares

RESOURCE PARTNERS

DuPont
FamilySafe
PGT Industries
Simpson Strong-Tie
SmartVENT, Inc.
Ventilated Awnings
Wayne-Dalton

ACADEMIC PARTNERS

Actuarial Foundation
Central US Earthquake Consortium
Florida International University
International Code Council
National Storm Shelter Association
Texas Tech Wind Science and Engineering Research Center
University of Florida

How To Find A

Reputable Contractor

It is essential that your contractor has all relevant licenses and insurance before any work is undertaken. Check with the state agency that handles the licensing of professionals and your local Better Business Bureau for any complaints on file. Be cautious about hiring contractors to repair or rebuild your damaged property. Remember the old adage: "If it sounds too good to be true, it probably is." FLASH urges homeowners to follow these guidelines:

- Get estimates from at least three contractors. Be sure they have all relevant licenses. Beware of contractors soliciting work door-to-door.
- Ask for and check references of other work the contractor has done.
- Ask for proof of insurance. If the contractor does not have disability and workers' compensation insurance, you may be liable for accidents on your property.
- Ask for a written estimate. Read the fine print. Make sure it includes everything you expect the contractor to do.
- Get a contract in writing. It should cover exactly what work is to be done, when work will start, how much it will cost, payment schedules, and the quality of materials to be used. Once signed, the contract is legally binding on both you and the contractor.
- Never make full payment up front. Don't sign over an insurance settlement check to the contractor. Reputable contractors will accept payment based upon the percentage of work completed.
- Don't make final payment until the work is finished. Obtain lien waivers to ensure that no one who supplied materials can put a lien on your home because the contractor did not pay them.
- Make sure all work that requires city or county permits and inspections is officially approved in writing before the final payment is made.



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