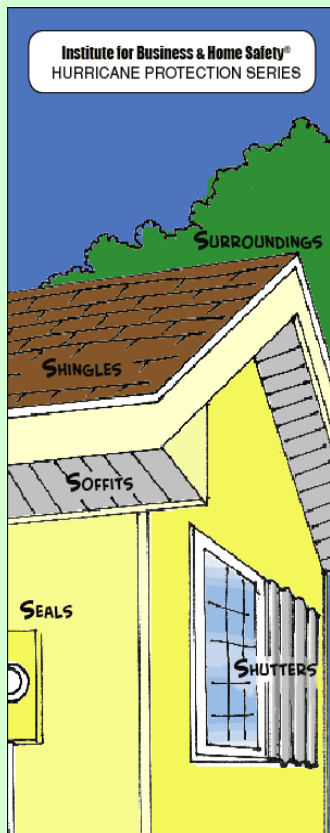


INSTITUTE FOR

**Business &  
Home Safety****HOW TO PROTECT YOUR HOME:  
“S” MARKS THE SPOT****Strengthen These Five Spots  
to Make Your Home More  
Secure**

Hurricanes cause damage to homes and property, destroy furniture and keepsakes, and disrupt your life for weeks or months at a time.

In this guide, the Institute for Business & Home Safety (IBHS) outlines Five **Spots** where some work can make a big difference in how well your home survives a hurricane.

- **Shutters**
- **Shingles**
- **Soffits**
- **Seals**
- **Surroundings**

By paying attention to these **Spots**, you reduce the chance

wind and water will damage your home.

Some of these projects may even be important for relatively new homes if they have not been built using the latest in hurricane resistant materials and with the right attention to details.

If you are handy with a hammer, saw, caulk gun and can work on a ladder, you can do much of the work yourself. Most of these projects can be accomplished in a day or less. And by doing them now, you'll have ample time just before a hurricane strikes to install protection devices and take care of last minute chores.

**SHUTTERS**

Protection of openings is



probably the most important thing you can do to improve the chance your home will survive a hurricane.

Openings include all windows, entry doors, sliding glass doors, garage doors and gable end vents.

To understand just how powerful a hurricane can be, a 140 m.p.h. wind can exert an inward push of 1000 lbs. on a typical exterior door and an outward pull of almost 1300

lbs. on a door near a wall corner. And these forces are not steady. They can cause windows, doors and protection devices to vibrate and work loose, so good anchorage is extremely important.

What could potentially threaten your home from the force of these winds? Wind pressures are one factor; but also look at the types of roof covering on nearby houses and buildings, because older tile and shingle roofs often shed debris in high wind. Unanchored sheds, carports and screen enclosures frequently fail in these conditions and become airborne, as do trees, shrubs and yard objects. If you see a lot of potential "missiles," make opening protection your highest priority.

If you are replacing existing windows and doors, or building a new home, consider installing impact-resistant products. They provide full-time protection and will not require any work just before a storm.

**Windows**

Make sure that every window can be easily protected before a hurricane strikes. When wind speeds climb above hurricane force, impact resistant panels will provide much needed protection from flying debris that can break window panes, and can also reduce water intrusion. If you already have shutters, use them. If you plan to get professionally installed systems that meet building code approved standards, order them as soon as possible since the wait for installation may be long. If you intend to use plywood, prepare and label the panels ahead of time, and

install permanent stainless steel anchors around the windows.

**Entry Doors**

Entry doors can be forced open by wind pressure or the impact of flying debris. All doors should have at least three hinges and a security lock with a dead bolt at least 1" long, and the door framing should be securely anchored to the wall structure. Unless you have a newer door or a sticker indicating it is rated for wind pressure and flying debris, it is safe to assume it is not an impact rated door. Doors installed in wood frames rarely provide the recommended protection from windborne debris or wind pressure. Wooden doors with raised panels are particularly vulnerable to splitting apart when they are hit by debris.

You can shutter doors with a code approved pressure and impact rated shutter system, but you must keep at least one door operable from inside the living space. This can be done by using an accordion shutter system that can be operated from inside or outside the house. Also consider replacing at least one door with one that is code approved for wind pressures and debris impact appropriate for your area. You can check with your building department to find out the local requirements.

Double entry or "French doors" have been particularly susceptible to failure from wind pressure and should have the highest priority for strengthening or shuttering. If you have glass panels in the doors or wood doors with raised panels, your least expensive option will likely be to shutter the door. If they are solid doors, at a minimum you

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should improve the anchorage of the fixed door by adding heavy duty barrel bolt anchors at the top and bottom and make sure the barrels extend into the header and floor (not just the threshold unless it is well anchored to the floor).

### Patio Doors

Newer sliding glass doors use tempered glass, which is significantly stronger than regular window glass. (If it is tempered glass a label indicating this will be etched in one of the corners.) However, the loss of one of these doors creates a large opening for wind and water to enter, which was often seen in areas affected by the highest winds from the 2004 hurricanes. Shuttering the doors is one of the most effective ways to protect them from flying debris, and should help reduce water intrusion.

If the doors open onto a porch or lanai, installing code approved impact resistant screen products around the perimeter may be the most cost effective way to protect all the openings to that area from flying debris and also reduce water intrusion around the doors. Make sure that the roof of the porch or lanai is well anchored to the floor slab or foundation.

### Garage Doors

Because of their size, garage doors are highly susceptible to wind damage, including buckling, twisting off the tracks and impact from debris.

Failure of the garage door allows the full fury of the hurricane to act on interior walls, doors, ceiling or roof that form the barriers between the inside

of the garage and the rest of the house. This frequently leads to failure of these surfaces and can lead to significant loss of the roof.

One of the simplest solutions is to replace the door and its tracks with a door that is code approved for both wind pressure and impact protection. Another solution is to protect the garage door with a shutter or screen product that is rated for both wind pressure and debris impact. Vertical bracing systems can be effective for supporting the door against wind pressure loading. Permanently attaching wood members to the garage doors will change the balance of the door and can create dangerous situations that have to be addressed by a professional installer. Furthermore, bracing systems will not improve the resistance of the door to penetration from windborne debris. Backing your car against the door provides little additional bracing and just puts it closer to possible impacts.

### Gable End Vents

Water entering your attic space can soak the insulation and can lead to collapsed ceilings. Water can get in where roof covering is lost, through gable vents and through soffits. Gable vents can be sealed with sheets of plywood or polycarbonate as if they were windows. Even though gable end vents may have louvers designed to keep water out, they are not designed to keep out water driven by hurricane force winds.



### SHINGLES

Keeping shingles on your house is extremely important. Check to make sure they are well secured to the roof, particularly along the roof edges.

A common problem is that edge shingles are not well fastened or extend beyond the drip edge more than the 1/4" typically recommended for high wind areas. Once the perimeter shingles lift off, a peeling process starts and creates a domino effect.

The attachment of perimeter shingles can easily be checked by gently trying to lift the lower edge of the shingle. If it comes up without much effort (older shingles become brittle and may crack when bent too much), then you should secure them, which is easy.

If you find that a lot of shingles, including ones away from the edge, are poorly adhered, budget for a new roof in the near future. There have been significant improvements in shingles and the adhesive strips that anchor them to the ones below. New high wind rated shingles installed according to manufacturer's recommendations for high wind areas and with extra edge sealing performed very well in the hurricanes of 2004.

### SOFFITS

Keeping soffits in place can also help keep water out of your house.

Aluminum and vinyl soffits were often blown off homes during the 2004 hurricane season. This resulted in lots of additional water getting into people's homes. Properly installed soffits should not be a problem in most conditions. However, it is difficult to determine whether they have been installed according to the manufacturer's recommendations and with enough fasteners.

Some, such as the one shown below, have wood supports but the soffit material is not adequately fastened to the wood. More often, no wood backing is installed and the vinyl or aluminum channels are stapled or nailed to the wall.



### SEAL

In addition to entering through gable end vents and soffits, water can invade homes in a number of other ways, especially when it's being blown horizontally.

To emphasize how important it is to seal these areas to prevent water intrusion, consider this:

Hurricane force winds can blow water uphill. In fact, a 74 m.p.h. wind (the lowest

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hurricane wind) can blow water up a wall about 4". A 110 m.p.h. wind can blow water up a wall nearly 6". With that kind of force, gallons of water can be pumped through even very small cracks in walls and end up in the wall cavity or living space.

Consequently, penetrations in walls can allow enough water into a house to cause lots of damage. If there is a loss of power for air conditioners (AC) or dehumidifiers to dry things out, that water damage could lead to mold.

Look for holes where wires, cables and pipes enter and exit the house. In addition to openings for cable TV and telephone lines, seal all the way around electrical boxes and circuit breaker panels. Pipe penetrations include AC refrigerant lines, AC condensate lines, water heater pressure relief lines and water pipes. Also seal cracks around wall outlets, dryer vents, bathroom and kitchen vents and electrical devices such as wall lights.

Goose neck vents, turbine vents and a variety of roof vents that work in ordinary wind probably will not keep out water in a hurricane. Most are not designed to operate in strong winds and few are designed to handle the wind loads induced. The vents should be removed or anchored more securely and well sealed. If you remove them, securely seal the opening with a cover that will not be blown or sucked off.

### SURROUNDINGS

Limiting possible sources of wind-borne debris before a

storm will help protect your home and those around you.

Replace gravel/rock landscaping materials with shredded bark. In a particularly strong hurricane, gravel has been found in mail boxes and has shredded vinyl siding.

Keep trees and shrubbery trimmed. Cut weak branches and try to reduce the amount of Spanish Moss growing on branches.

Limit yard objects like garden spheres or gnomes, and remove chairs or other furniture when not in use, so there's less work to do to prepare for a hurricane.

### WHEN A HURRICANE THREATENS

- Move anything outside that can become flying debris into your house or garage.
- Fill your bathtub with water that can be used for flushing toilets or washing.
- Follow weather and news reports so you are aware of the danger and can heed evacuation orders from local authorities.
- If you are in a surge or flood prone area, evacuate as early as possible.

If you ride out the storm in your house, stay in a sheltered area and away from windows and doors, even if they are shuttered.

### ADDITIONAL INFORMATION

Homes built to meet or exceed the requirements

of modern building codes are likely to be better prepared to withstand a hurricane with little or no structural damage than are older homes. This is largely because modern codes for hurricane prone regions promote good connections among all the parts of the home's structure.

For older homes, a long-term goal would be to improve the connections at points where the roof and foundation meet the walls. However, this type of modification can be expensive and is most easily accomplished when re-roofing or during major remodeling.

Work involving the home's structure is usually best left to a contractor. A proper evaluation of the structural weaknesses and appropriate remedial measures may require services of a registered design professional, such as an architect or engineer.

