



Avoiding Hurricane Damage: A Checklist for Homeowners

F E D E R A L E M E R G E N C Y M A N A G E M E N T A G E N C Y

Once a major storm hits, it's too late to protect your home and property. But there are things you can do now to reduce damage from high winds and water. Some are fairly simple and inexpensive; others will require a professional contractor. You'll need to consider the characteristics of your home, your financial resources and the building codes in your community.

This homeowner's checklist will help you learn what you can do. For more information about the costs and benefits of each measure, talk to a professional builder, architect or contractor. You should also ask your building department about building permit requirements.

INFORMATION YOU NEED

◆ Do you know your hurricane risk?

Ask your local emergency management office or American Red Cross chapter about the history of hurricanes in your area. Ask for information about protecting your family and home.

Ask your emergency management office, building department or floodplain management office to see a flood map of your community. There may be a projected flood elevation for your neighborhood. This information will help you determine how much water is likely to come in.

◆ Do you have enough flood insurance?

Even if you have taken steps to protect your home from flooding, you still need flood insurance if you live in a floodplain. Home owners' policies do not cover flood damage, so you will probably need to purchase a separate policy under the National Flood Insurance Program (NFIP).

It takes 30 days for a flood policy to take effect.

This is why you need to purchase flood insurance before flooding occurs.

If your insurance agent is unable to write a flood policy, call 1-800-638-6620 for information.

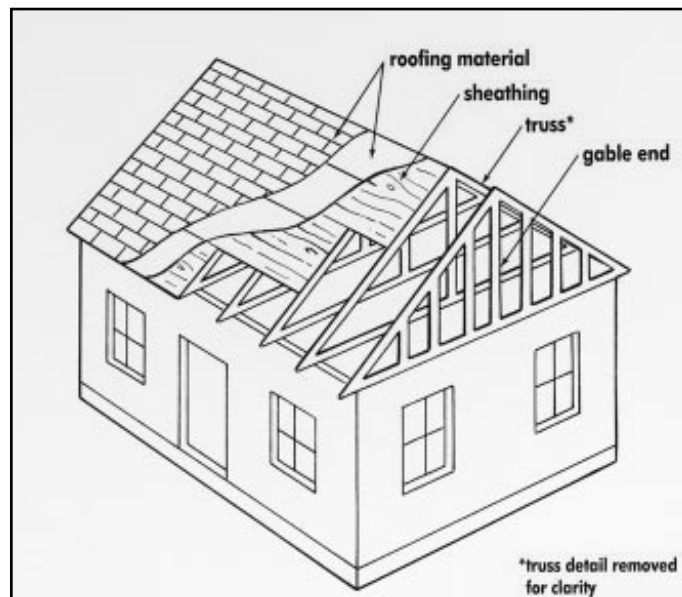
PROTECT YOUR HOME FROM HIGH WINDS

◆ Is the roof sheathing properly installed?

During a hurricane, wind forces are carried from the roof down to the exterior walls, down to

the foundation. Homes can be damaged when wind forces are not properly transferred to the ground.

Roof sheathing (the boards or plywood nailed to the roof rafters or trusses) can fail during a hurricane if not properly installed. Examine the sheathing from the attic. If many of the nails have missed the rafters, you may need to renail the sheathing. If you're putting on a new roof, make sure the sheathing complies with current recommended practices.



Make sure roof sheathing is properly installed.

▶ **Are end gables securely fastened to the rest of the roof?**

In a hurricane, the side walls of the roof (end gables) take a real beating and can collapse. Gable bracing often consists of 2"x4"s placed in an "X" pattern at both ends of the attic: from the top center of the end gable to the bottom of the brace of the fourth truss, and from the bottom center of the end gable to the peak of the roof.

If your end gables do not appear to be braced, use a licensed contractor to install bracing. Ask your local building department whether a building permit is required for this work.

▶ **Are double entry doors secured at the top and bottom?**

The exterior walls, doors and windows are the protective shell of your home. If the shell is broken during a hurricane, high winds can enter the home and put pressure on the roof and walls, causing serious damage.

For each double door, at least one of the doors should be secured at both the top of the door frame and the floor with sturdy sliding bolts. Most bolts that come with double doors, however, are not strong enough to withstand high winds. Your local hardware can help you select the proper bolts. Some

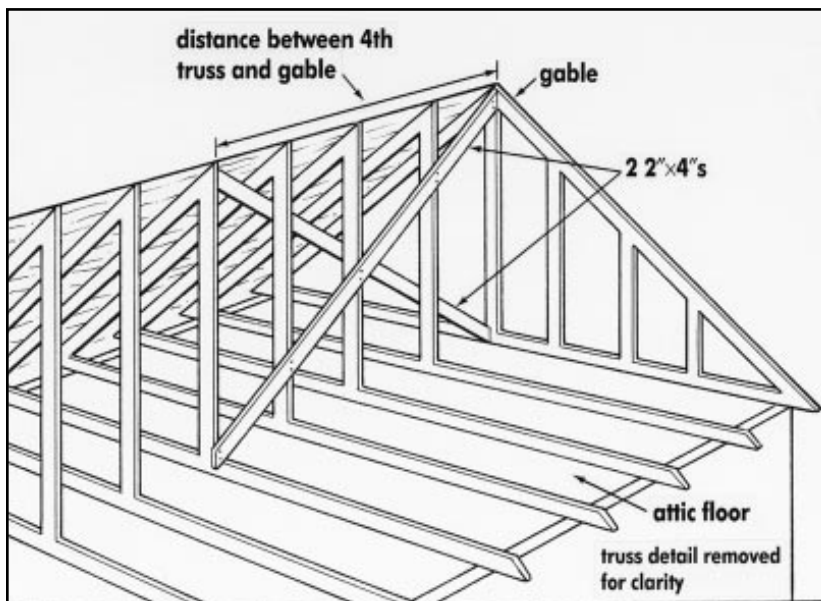
door manufacturers provide reinforcing bolt kits made specifically for their doors.

▶ **Has the garage door been properly secured?**

If the garage door fails, winds can enter your home and blow out doors, windows, walls and the roof. Ask your building department for guidance on what to do.

▶ **Are windows protected by storm shutters?**

Installing storm shutters is one of the best ways to protect your home. Purchase or make storm shutters for all exposed windows, glass surfaces, French doors, sliding glass doors and skylights. There are many types of manufactured shutters made out of wood, steel or aluminum. You can also make storm shutters with 5/8-inch thick exterior-grade plywood.



Example of gable bracing

◆ **Is the roof fastened to the walls with hurricane straps?**

Hurricane straps (made out of galvanized metal) help keep the roof fastened to the walls in high winds. They can be difficult to install, so you may need a contractor for this project. Ask your building department whether hurricane straps are required or advisable in your area.

Protect your home from flooding

◆ **Do you know the projected flood elevation for your area?**

Ask your building department, flood plain management office or emergency management office to see a flood map of your community. There may be a projected flood elevation for

your neighborhood. This information will help you determine how much water is likely to come in.

◆ **Is the main electric panel board located above potential flood waters?**

The main electric panel board (electric fuses or circuit breakers) should be at least 12" above the projected flood elevation for your home. The panel board height is regulated by code. All electrical work should be done by a licensed electrician.

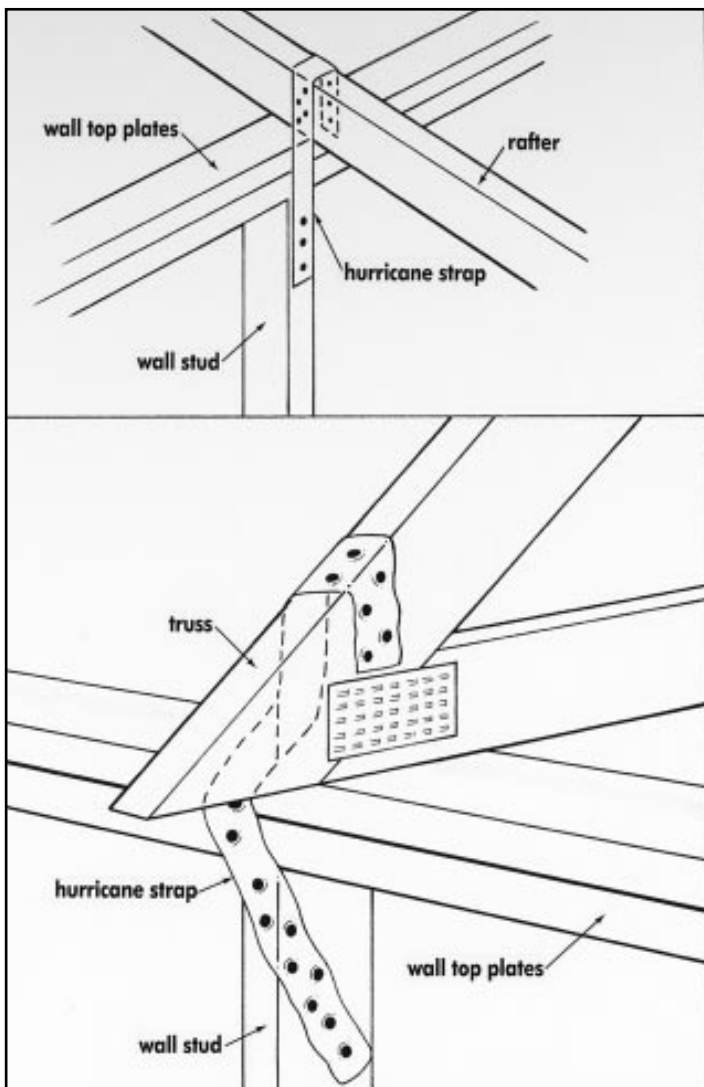
◆ **Are electric outlets and switches located above potential flood waters?**

Consider elevating all electric outlets, switches, light sockets, baseboard heaters and wiring at least 12" above the projected flood elevation for your home.

You may also want to elevate electric service lines (at the point they enter your home) at least 12" above the projected flood elevation.

In areas that could get wet, connect all receptacles to a ground fault interrupter (GFI) circuit to avoid the risk of shock or electrocution.

Have electrical wiring done by a licensed electrician.



Examples of hurricane strap installation

◆ **Are the washer and dryer above potential flood waters?**

For protection against shallow flood waters, the washer and dryer can sometimes be elevated on masonry or pressure-treated lumber at least 12" above the projected flood elevation. Other options are moving the washer and dryer to a higher floor, or building a floodwall around the appliances.

◆ **Are the furnace and water heater above potential flood waters?**

The furnace and water heater can be placed on masonry blocks or concrete at least 12" above the projected flood elevation, moved to inside a floodwall or moved to a higher floor. (You have more options for protecting a new furnace. Ask your utility about rebates for new energy efficient furnaces. The rebate plus the savings in fuel costs could make the purchase feasible.)

Furnaces that operate horizontally can be suspended from ceiling joists if the joists are strong enough to hold the weight. Installing a draft-down furnace in the attic may be an option if allowed by local codes. Some heating vents can be located above the projected flood elevation.

Outside air conditioning compressors, heat pumps or package units (single units that include a furnace and air conditioner) can be placed on a base of masonry, concrete or pressure-treated lumber.

All work must conform to state and local building codes.

◆ **Is the fuel tank anchored securely?**

A fuel tank can tip over or float in a flood, causing fuel to spill or catch fire. Cleaning up a house that has been inundated with flood waters containing fuel oil can be extremely difficult and costly.

Fuel tanks should be securely anchored to the floor. Make sure vents and fill-line openings are above projected flood levels.

Propane tanks are the property of the propane company. You'll need written permission to anchor them.

Be sure all work conforms to state and local building codes.

◆ **Does the floor drain have a float plug?**

Install a floating floor drain plug at the current drain location. If the floor drain pipe backs up, the float will rise and plug the drain.

◆ **Does the sewer system have a backflow valve?**

If flood waters enter the sewer system, sewage can back up and enter your home. To prevent this, have a qualified, licensed plumber install an interior or exterior backflow valve. Check with your building department for permit requirements.

If you're building or remodeling a home, there are many other ways to protect your property that are not addressed in this checklist. For more information, talk to a professional home builder, architect, contractor or building supply retailer. Check with your building department for permit requirements.