



## **Tornado Protection**

Even if you live outside Tornado Alley, the area of the country that runs north from Texas through eastern Nebraska and northeast to Indiana, you are still vulnerable to tornadoes. Kansas, Oklahoma and Texas may see more of these unpredictable and dangerous storms than other states, but the rest of the country also gets its share of twisters.

You can take several basic steps right now to protect your buildings from disaster. These recommendations apply to your commercial buildings as well as to your and your employees' homes.

### **First Things First**

Structures built to meet or exceed current model building codes for high-wind regions have a much better chance of surviving violent windstorms. The Standard Building Code, promulgated by the Southern Building Code Congress International, Inc., is one source for guidance on fortifying your buildings against fierce winds. Although few buildings can withstand a direct hit from a severe tornado, good construction will help the building survive if it is to the side of the tornado's path.

When inspecting your buildings, pay particular attention to the windows, doors, roof, gables and connections (roof-to-wall, wall-to-foundation). Buildings in inland areas are typically not built to withstand high wind forces, and weaknesses in these elements of your building make it more vulnerable to significant damage.

Work involving the building's structure calls for the expertise of a building contractor however, or even a registered design professional such as an architect or engineer.

### **When Landscaping**

- Replace gravel and rock landscaping material with shredded bark.
- Keep trees and shrubbery trimmed. Cut weak branches and trees that could fall on your buildings.

### **When Building or Remodeling**

**Windows:** If you are replacing your existing windows, install impact-resistant window systems, which have a much better chance of surviving a major windstorm. These window systems are commonly available in hurricane-prone areas. If you are unable to find them locally, you can order them from manufacturers or suppliers in coastal areas.

**Entry Doors:** Make certain your external doors have at least three hinges and a dead bolt security lock with a bolt at least one inch long. Anchor door frames securely to wall framing.

Garage Doors: Because of their size and construction, garage doors are highly susceptible to wind damage. A qualified inspector can determine if both the door and the track system can resist high winds and, if necessary, replace them with a stronger system. Garage doors more than eight feet wide are most vulnerable. Install permanent wood or metal stiffeners. Or contact the door manufacturer's technical staff for recommendations about temporary center supports you can attach and remove easily when severe weather threatens.

Roofs: If you are replacing your building's roof, take steps to ensure that both the new roof covering and the sheathing it attaches to will resist high winds. Your roofing contractor should:

- Remove old coverings down to the bare wood sheathing.
- Remove sheathing to confirm that rafters and trusses are securely connected to the walls.
- Replace damaged sheathing.
- Refasten existing sheathing according to the proper fastening schedule outlined in the current model building code for high-wind regions.
- Install a roof covering designed to resist high winds.
- Seal all roof sheathing joints with self-stick rubberized asphalt tape to provide a secondary moisture barrier.
- If you want to give your roof sheathing added protection, but it's not time to reroof, glue the sheathing to the rafters and the trusses. Use an adhesive that conforms to Performance Specification AFG-01 developed by APA The Engineered Wood Association, which you can find at any hardware store or home improvement center.

Gables: Brace the end wall of a gable roof properly to resist high winds. Check the current model building code for high-wind regions for appropriate guidance, or consult a qualified engineer or architect.

Connections: The points where the roof and the foundation meet the walls of the building are extremely important if it is to resist high winds and the pressures they place on the entire structure.

- Anchor the roof to the walls with metal clips and straps (most easily added when you replace your roof).
- Make certain the walls are properly anchored to the foundation. A registered design professional can determine if these joints need retrofitting, and a qualified contractor can perform the work the design professional identifies.
- If your building has more than one story, make certain the upper story wall framing is firmly connected to the lower framing. The best time to do this is when you remodel.

## When a Tornado Threatens

You can improve the odds of your building surviving high winds by taking these precautions, but you won't make it tornado-proof. Nor do these measures guarantee the safety of the building's occupants. Take these additional steps to protect yourself and your employees or tenants as fully as possible:

- Decide in advance where you will take shelter. Find a local community shelter and communicate the location of the shelter to all the building's occupants. When a tornado approaches, make it clear that building occupants are expected to go to the shelter immediately.
- Become familiar with your community's severe weather warning system and make certain that at least one responsible employee knows what to do when a tornado watch or warning sounds. Make sure your employees know how to learn about your emergency plans and how to take similar measures at their children's schools or day-care centers.
- Study your community's disaster preparedness plans.
- Move anything that can become flying debris inside your offices before a storm strikes. Do this only if authorities have announced a tornado watch, however. If authorities have not announced a tornado warning, leave it all alone.
- Don't open your windows. You won't save the building by opening the windows, as was once thought, and you may actually make things worse by giving wind and rain a chance to get inside.
- Finally, review your insurance policy periodically with your insurance agent to make sure you have sufficient coverage to rebuild after a tornado. Report any property damage to your insurance agent immediately after a natural disaster and make temporary repairs to prevent further damage.

Information provided by the Institute for Business and Home Safety (IBHS).  
Fireman's Fund is an IBHS member.



This bulletin provides general information and procedures that may apply to many business operations; however, it is not a comprehensive treatise on the subject, nor a "turnkey" plan to be implemented. Consult with your staff and/or specialists to determine how best this information may guide you to specific plans for your operations. Additionally, this bulletin does not substitute for legal advice, which should come from your own counsel. All recommendations described in this bulletin are generic and not specific to your unique business operations.

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