

Tornado and High Wind Protection



Sioux City, IA - The foam sections are so light that they can be easily assembled by one or two people, as these Lite-Form workers illustrate. Here workers assemble the roof panels which will have a rebar and concrete covering.
Photo by Dave Gatley/FEMA

During a tornado or severe thunderstorm, the most important consideration is to get those at risk into a sturdy shelter immediately. To survive a severe windstorm, those in the path must have three things. First, adequate advanced warning to confirm the threat to themselves; second, a severe weather emergency plan for the home; and third, a sturdy shelter for surviving extreme wind speeds.

A severe thunderstorm with 60 mph winds may not cause significant structural damage to a home, but few buildings are designed to withstand extreme straight-line wind speeds or a strong violent tornado. When wind speeds exceed about 100

m.p.h., the potential for damage to a home increases substantially, even when that home is built to existing codes.

A "safe room" is a reinforced area of a home designed to withstand severe windstorms. The safe room concept was developed by the Federal Emergency Management Agency (FEMA) and the Wind Engineering Research Center at Texas Tech University, and was based on the need to develop affordable yet sturdy shelters within single family homes. While basements offer some protection from damaging winds, the level of protection can be increased greatly by building a reinforced shelter area in a basement, or constructing a shelter in an above-ground room such as an interior closet, or a small study room.

An effective safe room must be strong enough to survive extreme wind speeds and the impact of airborne debris, sufficiently affordable to appeal to homeowners, and accessible quickly in the event a severe storm approaches. Safe rooms are easiest to install when the home is being built, however, safe room shelters can also be added to many existing homes. A variety of shelter options exist for homes with basements, homes built on a "slab-on-grade" foundation, and for homes with a "crawlspac" foundation. Typical costs range from \$2000 for a simple "lean-to" shelter in a new home basement, to \$6000 or more for an above-ground steel sheathing shelter.

Once the shelter is constructed, an emergency supply kit should be placed in the shelter. The kit should include an adequate supply of food and water for everyone that will be in the shelter, a NOAA Weather Radio and an AM/FM radio, first aid kit, flashlight, cell phone or radio, clothing for long-term sheltering, and formula, diapers, and bottles for babies.

After a disaster, an often-quoted saying is that "Possessions can be replaced, but people cannot." The addition of a safe room in a new or existing home is one of the best investments of time and dollars to ensure you survive nature's most violent storms.

Detailed construction plans and information related to safe rooms can be found on at the following website on the Internet:

<http://www.fema.gov/mit/saferoom/>