Tornado Preparedness Tips for School Administrators

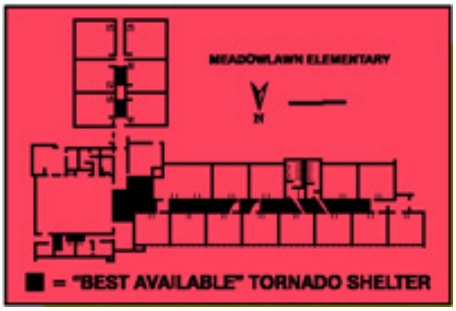
By: Roger Edwards
Storm Prediction Center, Norman, OK
Original Document: http://www.spc.noaa.gov/faq/tornado/school.html

Additional information provided by the Federal Emergency Management Agency

PREPARE A TORNADO SAFETY PLAN

The most important part of tornado safety in schools is to develop a good safety plan that is tailored to your building's design and has the ability to move people to safety.

Many school plans have settled for a "one size fits all" approach to tornado safety. The plans are often based on outdated literature – which can be dangerous, considering that every school is built differently.



The basic concept for 'best available tornado shelter' as shown in the illustration is generally correct (interior hallway), but the plan must be adapted to your school's arrangement or layout. For instance, if a school's interior hallway is lined with plate glass or has windows to the outdoors, it cannot be used as a tornado shelter.

The lowest level of a building is the safest shelter from tornadoes. However, in some large buildings, there may not be enough time to direct all occupants of the upper floors into safe areas, or enough space in the lower-floor safe areas to hold everyone.

School administrators need to evaluate the time, space, traffic flow and coordination needed to direct all students and staff to safe areas in an organized manner. This can be accomplished by a customized tornado drill, which will vary from one building to the next.

Things to Consider in a Tornado Safety Plan

1. **Seconds Count**. If it takes more than two or three minutes to move people from upstairs to downstairs, then it could be risky and dangerous. Although most tornado warnings are issued with ample lead time, sometimes tornadoes are unpredictable and come with little or no warning. Plan for a ***Reasonable Worst-Case Scenario***: a tornado is spotted nearby and touches down with little or no warning. That way, during a tornado warning with several minutes of lead time, the safety plan can be executed with people in their safe places within one or two minutes of the first alert.

2. **Flying Debris** is the biggest tornado hazard. For protection, you need as many walls between yourself and a tornado. In your building, are there interior hallways, rooms or corridors on the second floor that are exposed to the outside through windows, doors or glass walls? If so, flying broken glass and debris become projectiles and can cause severe cuts, injuries and even death. If there are enough enclosed places on the second floor with no direct exposure to the exterior, you *may* be able to save the time needed to move people down to the lowest level.

3. **Building Strength**: Is the construction of the main building architecturally sound? What interior parts could stay intact during total structural loads created by 150-200 mph winds? Is there any place on the upper floor safe enough in such structural stresses? If your building is relatively new, you should be able to consult the school's builders. A county engineer or structural engineer could also be consulted.

4. **Tornado Safe Rooms**: Safe rooms are reinforced small rooms built in the interior of a home or building, that are fortified by concrete and/or steel to offer extra protection against tornadoes, hurricanes and other severe windstorms. They can be built in a basement, or if no basement is available, on the ground floor. In existing buildings, interior bathrooms or closets can be fortified into safe rooms, as well. Additional resources on safe rooms and tornado protection are available at:
    a. Local/county emergency management offices or the nearest National Weather Service office.
    b. Federal Emergency Management Agency (FEMA) website on tornado shelters in public buildings: **Emergency Management – Shelter from the Storm** (http://www.fema.gov/safe-rooms/emergency-management-shelter-storm)
    c. FEMA's **Public and Community Safe Rooms** (http://www.fema.gov/safe-rooms/public-and-community-safe-rooms)

5. **Portable Classrooms**: Portable classrooms are most often constructed like mobile or modular homes and are considered unsafe during tornadoes and severe thunderstorms. A school's tornado safety plan must include getting students out of portable classrooms and into a safe area in the main building as quickly as possible, to minimize the time spent outside and exposed to the elements.
    a. Students should be evacuated from portable classrooms *before the storm threatens* – during a tornado or severe thunderstorm watch.
    b. Remember: Tornadoes can occur with little or no advanced warning. Moving portable classroom students to the main building during every severe storm watch may be a hassle, but it may also save precious seconds and lives if a tornado or extreme windstorm hits later.

6. **Gymnasiums and Auditoriums**: Large, open-span areas such as gymnasiums, auditoriums and most lunchrooms can be very dangerous, even in weak tornadoes, and should not be used for sheltering people. These types of rooms have inherent structural weaknesses with lack of roof support, making them especially prone to collapse in strong or severe winds.

Jan. 2008: An aerial view of Caledonia High School, in Mississippi, after the near side of the building was hit by a tornado/ABC photo by Brian Peters.

Additional Tips for Tornado Safety Plans

A carefully developed tornado drill should be conducted several times a year to keep students and staff in good practice. According to Ohio Fire Code (OFC) 409.2, Tornado drills shall be conducted at least once a month whenever school is in session during the tornado season. The "tornado season" is the period from the first day of April to the last day of July. Other important tips include:

1. If the school's alarm system relies on electricity, have a compressed air horn or megaphone to sound the alert in case of power failure.

2. Make special provisions in the school plan for disabled students and for those in portable classrooms.

3. Ensure someone knows how to turn off the electricity and gas, in the event the school is damaged.

4. Keep students in school beyond regular hours if threatening weather is expected, and inform the parents of this policy. Children are safer deep within a school than in a bus or car. Students should not be sent home early if severe weather is approaching.

5. Lunches or assemblies in large rooms should be postponed if severe weather is approaching. As mentioned earlier, gymnasiums, cafeterias and auditoriums offer no meaningful protection from tornado-strength winds. Even if there is no tornado, severe thunderstorms can generate winds strong enough to cause major damage.

6. Know the county in which your school sits, and keep a highway map nearby to follow storm movement from weather bulletins. Online maps and weather sources can be valuable, but may not be available if the power is out.

7. All schools and businesses should have a Public Alert Radio or NOAA Weather Radio with tone alert and battery backup to receive storm warnings quickly and directly from the National Weather Service.

8. Listen to local radio or television stations for information when severe weather is likely. The NWS **Storm Prediction Center** (http://www.spc.noaa.gov/) is another excellent resource tool.

WHEN A TORNADO THREATENS OR A TORNADO WARNING IS ISSUED …

Seconds count. Follow the tornado drill according to the safety plan that was developed. Lead all students to the designated safe places in a calm, orderly and firm manner. Everyone should crouch low, head down, protecting the back of the head with the arms. Stay away from windows and large, open rooms like gyms and auditoriums.

AFTER THE TORNADO …

Keep students assembled in an orderly manner and in a safe area way from broken glass and other sharp debris. Also keep them away from power lines, pools of water containing power lines and emergency traffic areas. While waiting for emergency personnel to arrive, carefully render aid to the injured.

Keep everyone out of the damaged parts of the building. Chunks of debris or sections of the building may fall or collapse. Ensure that no one is using matches or lighters, in case of leaking natural gas pipes or fuel tanks nearby.

Take a headcount of all students and staff. Ensure that all are accounted for.

It is very important for teachers, principals and other adult authority figures to set a calm example for students at the disaster scene and reassure those who are shaken.