



5 Steps in Conducting a School Tornado Assessment

- 1 How the process begins:** The tornado assessment process begins with an initial meeting of school stakeholders to discuss existing safety concerns, emergency planning issues and areas for improvement. Participants should include representatives from the district, school and community response agencies to ensure diverse perspectives and expertise. Schools may also include administrators, buildings and grounds personnel, communications staff, school resource officers, local law enforcement, local fire department, student support staff, special education staff and others with an investment in the process.
- 2 Review the school emergency plan:** A team of at least three to five members will use the tornado assessment checklist to discuss and evaluate the school's emergency plan, procedures, staff training, and other items that cannot be physically observed during a school walk-through. A copy of the school's emergency plan should be available for this discussion. It is important to note that this assessment is not meant to evaluate the school's preparedness, current practices or your emergency plan.
- 3 Walk-through of the school building and grounds:** After reviewing the emergency plan, team members should walk through the school facility and grounds. Using the checklist as a guide, examine all aspects of the school's interior and exterior. Throughout the assessment process, written comments should be noted for later review. The team will take photographs to highlight positive observations as well as potential hazards or areas for improvement. Thorough notes and visual documentation provide team members with the critical information necessary to generate a comprehensive and meaningful report.
- 4 What to expect the day of the tornado assessment:** Each tornado assessment team could consist of an Architect, a Structural Engineer, a FEMA representative, an Oklahoma Emergency Management representative, and a school representative(s). Before the day of the assessment the team will meet to identify possible "best-available areas of refuge" to be evaluated. On the day of the assessment the team will arrive and observe existing conditions around the interior and exterior of the facility. They will require access to spaces within and around the areas they identified for evaluation, including the area currently used in the event of a tornado. Each area will be surveyed and a recommendation will be made as to the "best available area of refuge".
- 5 Create a report and recommendations for improvement:** Team members will compile the results of all areas assessed in the tornado assessment checklist and create a report for school leadership. Formal reporting establishes a process of accountability that increases the likelihood of improvement and/or corrective action. If findings are not reported, then subsequent emergency plans and preparedness activities will not reflect or affect change.

The report should include documentation on successful prevention efforts and resources the school has already implemented along with the potential risks and areas of weakness identified during the assessment. The team may also make recommendations for improvements based on the assessment. Administrators can then prioritize solutions and proceed with a plan for addressing the most pressing tornado refuge safety concerns raised through the assessment process.

Tornado Assessment Checklist



Items the school should provide to the tornado assessment team:

15 days prior to the site visit:

- Existing building plans – full construction documents and/or as-built plans. These are the original architectural and structural engineering plans that the contractor used to build the school. If full documents cannot be located, any plans you can find could be helpful to the team performing the assessment.
- Flood Insurance Rate Map (FIRM) (<http://www.fema.gov/floodplain-management/flood-insurance-rate-map-firm>)
- Current tornado/emergency management procedures and/or Hazard mitigation plan, including a plan(s) of current areas of refuge. This document could also be called your Emergency Evacuation Plan.
- Photographs of the facility – interior and exterior and across the street for potential debris field.

On the day of the assessment:

- Access to the roof. A ladder will be needed.
- Access to all rooms and ceiling spaces in the school. A ladder will be needed.

General Information Needed:

- Contact information for the individual in charge at the school
- Number of students and staff at maximum occupancy
- Someone available with good knowledge of the facility, such as:
 - Gas locations in the building
 - Electrical panel locations
 - Roof access
 - Science lab locations
 - Kitchen location

Terms & Definitions

As-Built Plans

Also known as “existing building plans”, “blue prints”, “construction documents,” etc.

Best Available Area of Refuge

Evaluated by a design professional and identified as least vulnerable area/room in building. This area is designed to minimum building code requirements.

Different Levels of Protection

The different levels of protection listed above provide just that, different levels of protection. Think of it as a good, better and best classification.

Good: “Best Available Area of Refuge”

Better: “Hardened Area”

Best: “Safe Room/Storm Shelter”

FEMA 320

FEMA Guidelines for “Taking Shelter from the Storm: Building a Safe Room for Your Home or Small Business.”

FEMA 361

FEMA Guidelines for “Design and Construction Guidance for Community Safe Rooms.”

FEMA 431

FEMA Guidelines for “Tornado Protection: Selecting Refuge Area in Buildings”. This booklet presents information that will aid qualified architects and engineers in the identification of the best available refuge areas in existing buildings.

ICC 500

International Code Council Guidelines for the “Standard for the Design and Construction of Storm Shelters.”

Fujita Scale

A scale for rating tornado intensity, based primarily on the damage tornadoes inflict on human-built structures and vegetation. The official Fujita scale category is determined by meteorologists and engineers after a ground or aerial damage survey, or both; and depending on the circumstances, ground-swirl patterns radar tracking, eyewitness testimonies, media reports and damage imagery. The F-Scale was replaced with the Enhanced Fujita Scale (EF-Scale) in the United States in February 2007.

Hardened Area or Room

Designed to consider wind speeds or wind-borne debris impacts at some level between code and ICC 500 or FEMA Criteria. Designed to meet minimum building code requirements.

Near Absolute Protection

Near-absolute protection means that, based on our current knowledge of tornadoes and hurricanes, the occupants of a safe room built according to FEMA Guidelines will have a very high probability of being protected from injury or death. (FEMA 361, Chapter 1, Page 1-2)

Safe Room

A space that has been designed and constructed to comply with FEMA 361 guidelines and provides “near absolute protection” from extreme wind events.

Storm Shelter

A space that has been designed and constructed to comply with ICC500 and provides “life-safety protection” from wind events.