

Mitigating Hazards in School Facilities

National Clearinghouse for Educational Facilities

Mitigation is any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. — FEMA

School safety is a human concern, one that every school and community must take seriously and strive continually to achieve. It is also a legal concern; schools can be held liable if they do not make good-faith efforts to provide a safe and secure school environment.

How schools are built and maintained is an integral part of school safety and crisis planning. Schools with poor access control are more vulnerable to intruders. Students in schools with overlapping pickup and drop off points are more likely to be hurt by a bus or car. Schools that store materials in stairways will have egress problems during a fire or emergency.

Every school is unique by virtue of its design, location, and students, and each has its own history and culture. Some schools are relatively open and safe, others are highly protected yet unsafe.

That is why mitigating hazards in school facilities should be planned and implemented by those who know the school and its community best — school and district staff in alliance with local emergency responders and the school community. Working together, they can successfully:

- Assess the safety and security of school buildings, grounds, and surroundings.
- Make a hazard mitigation plan.
- Implement the plan.

Improving the safety of school facilities is not a new idea. All schools practice it in some way, but often informally and on an *ad hoc* basis. A school and its occupants are best protected by conducting and maintaining a systematic, careful, and well-documented hazard mitigation planning process. This also fulfills the school's legal obligation to maintain an appropriate standard of care.

1. Assess Your School Facilities

Select an Assessment Tool. A variety of school facility safety assessment tools exist. Among the best are those developed by the state departments of education or safety centers in Florida, North Carolina, Kentucky, Texas, and Virginia.¹ The National Clearinghouse for Educational Facilities has combined the assessment measures from these and a wide variety of other sources into the following series of **NCEF Assessment Guides** for examining the safety and security of all aspects of a school facility:

[School Grounds and Site Access Control](#)
[Outdoor Athletic Facilities and Playgrounds](#)

[Building Access Control: Entry Doors, Windows, Walls, Roofs](#)
[Entry and Reception Areas](#)

[Corridors, Interior Doors, and Lockers](#)
[Stairs and Stairwells](#)
[Elevators](#)
[Exitways](#)

[Classrooms](#)
[Portable Classrooms](#)
[Art, Music, and Dance Rooms](#)
[Labs, Shops, and Computer Rooms](#)
[Offices, Workrooms, and Conference Rooms](#)

[Food Service Areas and Student Commons](#)
[Restrooms](#)

[Library/Media Center](#)
[Health Services Center](#)
[Auditorium/Theater/Performing Arts Center](#)

[Indoor Athletic Facilities](#)

[Emergency Communications, Power, Fuel, and Water](#)
[Security and Surveillance Systems](#)
[Fire Alarm and Control Systems](#)
[Mechanical Systems](#)
[Custodial and Equipment Rooms](#)

[Areas of Refuge/Community Shelter](#)

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The **NCEF Assessment Guides** embody the three principles of *crime prevention through environmental design*, or CPTED: *natural surveillance*, the ability to easily see what is occurring in a particular setting; *territoriality-maintenance*, the ability to demonstrate ownership of and respect for property; and *natural access control*, the ability to restrict who enters or exits an environment. CPTED has been used to improve building and community safety since the 1970s and is universally considered to be an excellent crime-prevention methodology.

Assemble an assessment team. Find the best school safety specialist you can to head the assessment team. Include the school or district facility manager, principal or vice principal, school resource officer, head custodian, local fire, police, and rescue officials, and appropriate architectural, engineering, and security experts. Ask selected teachers and students to help inspect areas they have special familiarity with, such as specialized classrooms, theater and backstage areas, and the like. Be sure someone on the team has photography skills.

When assembling a full assessment team is impractical, interview key school personnel to identify specific safety and security concerns and potential sources of trouble that otherwise might be missed.

Make sure that safety consultants have considerable school experience and are independent of any organization that sells or promotes security systems or devices. The number one finding of a 2006 study by the

Arizona School Facilities Board was that a cottage industry has developed around recommending and selling [security] devices to school administrators,

regardless of whether there is any demonstrated need.

Look at the record. Before assessing the school and its grounds, look at the record. What problems has the school been experiencing, where are they located, and when do they occur? Are unwanted visitors entering through an uncontrolled entrance after school? Is breaking and entering a problem on an isolated side of the building at night? Is there fighting in the cafeteria due to overcrowding at lunchtime? Put together a list of such incidents and look for patterns. This helps keep a focus on problem areas.

Perform the assessment. The assessment consists of one or more building and site walk-throughs by the assessment team. Keep participants to a manageable number by bringing in specialists separately to examine

particular locations or systems. Use the **NCEF Assessment Guides** or a similar assessment tool to ensure a thorough inspection of each area, room, and building system. Take photographs where needed, and be sure to examine areas surrounding and adjacent to the school.

Write up the results. The facility assessment report documents the school's physical vulnerabilities. Put your findings in writing and supplement them with photographs. If the **NCEF Assessment Guides** are used, they will provide a good report framework and serve as detailed backup documents.

2. Make a Plan

Create a standing committee on hazard mitigation.

The school's hazard mitigation committee should be a smaller, permanent version of the facility assessment team, but with a different focus and leadership. Appoint the principal or a vice principal as chair and include the school or district facility manager, school resource officer, head custodian, local fire, police, and rescue officials, and several staff, school board, building professional, or community representatives known for their integrity and good judgment.

The committee's job is to prepare the school's hazard mitigation plan, help integrate it with the school's crisis plan, and serve as effective advocates for the hazard mitigation plan's implementation.

Prepare the hazard mitigation plan. The hazard mitigation committee's first task is to consider the findings of the facility assessment report in the context of the hazards and risks the school has faced in the past and is expected to face in the future. This may take considerable time and thought, since vulnerability and risk are not readily quantifiable. The committee's conclusions should be documented in a way that shows they are based on all available information and on the committee's collective best judgment.

Some vulnerabilities will be small and easy to mitigate, such as trimming overgrown bushes that provide cover for intruders. Others may be more difficult and expensive, such as controlling vehicle access to the school grounds. And some may be too unrealistic or costly to mitigate, such as relocating administrative offices to the entry area or reconfiguring restrooms to make them easier to supervise.

Understand risk. A *hazard* is defined as anything that can cause loss or damage to a school or its occupants. *Risk* is the chance, or probability, that such loss or damage will actually occur. In the United States, areas prone to hurricanes, tornadoes, floods, and earthquakes are well defined. State regulations, building and fire code requirements, and emergency evacuation procedures have been developed over many decades to eliminate or mitigate the risks of these hazards, as well as most fire and accident hazards.

Aside from natural disasters, the most problematic hazard is human behavior, particularly violence in its extreme forms. The probability, or risk, of a shooting occurring in a school is extremely low, but shootings do happen. The probability of a terrorist attack on a school is nearly zero, but attacks have occurred in other countries, and schools near the World Trade Center in New York City were affected by 9/11.

Nothing can be made free of risk, so do not put off the mitigation of everyday accident, fire, natural disaster, and human behavior hazards in the name of fortifying a school for the unlikely chance of a terrorist attack. Looking at past incidents and their patterns of occurrence cannot wholly predict the future, but it makes the planning process more realistic.

Weigh passive vs. active safety. Think about the tradeoffs between the passive safety that buildings provide and the active safety people provide. The one-time cost of even a fairly expensive building safety upgrade may be significantly lower than the perpetual costs of the security guards or extra school staff that might otherwise be needed.

Select security technology with care. School safety can be enhanced by the appropriate use of security technologies such as alarm systems, smart cards, and surveillance equipment. Technology can be expensive, however, and require ongoing maintenance, repair, and frequent upgrading by specialized employees or service contractors. It can be oversold or mismatched to the problems being addressed. In some cases, it may reinforce fear and undermine the social ecology of the school. For these reasons, carefully think through the costs and benefits of each technology, closely evaluate all sales pitches, and talk to as many vendors as possible before making a decision.²

Improve school climate. Creating an environment where students, staff, and the surrounding community have a relationship of trust, mutual respect, and open

communication is the best and least expensive way to reduce or even eliminate the need for many security improvements. This takes time and effective leadership, but it may be the single most important security measure your school can undertake.

Calculate costs, locate funding. Once a preliminary list of mitigation measures has been drafted, prepare rough cost estimates and identify possible funding sources for each measure. Usual funding sources are the school's *maintenance and operation funds* for small projects and *capital improvement funds* for large ones. Other sources include *school and community fundraising activities* and *state, federal, and private grant programs*.

Seek input. Refine the list of mitigation measures until it is realistic and achievable. To gain the widest possible support, seek input from the entire school community. Rank-order the final list of measures according to cost, urgency, ease of completion, or any other method that aids decision making and implementation.

Coordinate hazard mitigation with crisis planning. Your school's crisis plan should have four components: mitigation, preparedness, response, and recovery (see [Practical Information on Crisis Planning: A Guide for Schools and Communities](#), U.S. Department of Education, Office of Safe and Drug-Free Schools, 2007). Most of the measures in your hazard mitigation plan will be directed to the first component, mitigation, but it may include a few preparedness- and response-related measures as well, such as fortifying emergency shelter spaces, upgrading emergency communications, and installing improved door hardware to aid lockdowns.

To supplement the school's crisis plan, create digital files of the school's site and floor plans and include selected interior and exterior photographs and other key building information, such as the location of alternative site access points and the location and operation of critical water, power, and gas controls. Make these files available, with appropriate safeguards, to school staff and local emergency responders.³

No doubt some of the people involved in your school's crisis planning are involved in hazard mitigation planning too, so integrating hazard mitigation measures into the crisis plan should not be difficult. Nevertheless, coordination between these two activities is necessary and important. As a rule, the more building-related hazards can be mitigated, the simpler and more effective crisis planning can be.

3. Implement the Plan

Start small, think big. After the hazard mitigation plan is complete, the hazard mitigation committee should oversee its implementation. Only the least costly mitigation measures are likely to be implemented immediately, with the rest added to either the school's maintenance and operations or capital improvement plans. There, in the absence of outside funding, they will have to compete with other, well established priorities like custodial services, HVAC maintenance, roof replacement, and new athletic facilities.

Justify thoroughly. What may seem like a logical safety improvement to the hazard mitigation committee may be a hard sell to those with other interests. Which should be funded first, new artificial turf for the football field or a new school security card system? Marshal your best arguments for each mitigation proposal to be sure it receives appropriate consideration.

Meet regularly, advocate continually. To be effective advocates, the committee should meet regularly to:

- Monitor the implementation of mitigation measures.
- Brainstorm alternative mitigation strategies that can be implemented sooner and at lower cost. Always include improving the school's climate as a mitigation strategy.
- Seek additional sources of funding from your community and from state, federal, and private grant programs.
- Monitor problems in and around the school and changes to the school crisis plan that may require adjustments to the hazard mitigation plan, and update the hazard mitigation plan as needed.
- On a regular basis, inspect and reassess school buildings, grounds, and surroundings for new vulnerabilities and potentially hazardous conditions.
- Document the school's good faith efforts in meeting its legal obligation to mitigate hazards.

Some, or perhaps many, hazard mitigation measures may not be implemented because of their expense. Nonetheless, their identification and consideration through an informed and deliberative process highlights the school's efforts to maintain an appropriate standard of care. Unimplemented but necessary mitigation

measures may serve another purpose as well: to help justify a major school renovation or even a new school facility.

Benefit mutually. Both the school and community will benefit from the relationships that develop among school staff and community officials as they work together on the hazard mitigation process, relationships that will help make the entire community safer and more secure.

Additional Information

For more information on safe school facilities, including web access to the **NCEF Assessment Guides** and other NCEF safety and security publications, visit the NCEF [Safe Schools](http://www.ncef.org) page at www.ncef.org.

¹ **Florida Safe School Design Guidelines: Strategies to Enhance Security and Reduce Vandalism.** Florida Department of Education. 2003. http://www.fldoe.org/edfacil/pdf/fl_ssg.pdf

Safe Schools Facilities Planner. North Carolina Department of Public Instruction. 1998. <http://www.schoolclearinghouse.org/pubs/safesch.pdf>

K12 Security & Vulnerability Assessment. Kentucky Center for School Safety. No date. <http://www.kycss.org/emp/SSVulnerabilityAssessment.doc>

Campus Safety and Security Audit Toolkit. Texas School Safety Center. 2006. <http://www.cscs.txstate.edu/txssc/txssc-safety-audits.htm>

School Safety Audit Protocol. Section 1, "Buildings and Grounds." Jo Lynne DeMary, Marsha Owens, A.K. Ramnarian. Virginia Department of Education. 2000. <http://www.doe.virginia.gov/VDOE/Instruction/schoolsafety/safetyaudit.pdf>

² For more information, see the NCEF publication **School Security Technologies**, www.ncef.org/pubs/security_technologies.pdf

³ For more information, see the NCEF publication **Emergency Response Information for School Facilities**, www.ncef.org/pubs/emergency_response.pdf

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