



# U.S. Department of Education Office of Safe and Healthy Students



## Conducting a Safety Audit



# Presentation Goals

- 1. Examine how physical design affects school safety.**
- 2. Review elements of strong safety-related school design.**
- 3. Discuss school vulnerability assessments.**
- 4. Highlight solutions that address physical design weaknesses.**
- 5. Outline the four elements of Crime Prevention Through Environmental Design (CPTED).**



# School Facilities Data

## Number of schools in the U.S. <sup>a</sup>

- **98,916** - Public elementary and secondary schools (2007/08)
- **33,740** - Private elementary and secondary schools (2007/08)
- **4,388** - Public charter schools nationwide (2007/08)

## Number of new school buildings in 2007—08 school year <sup>a</sup>

- **1,927** new public schools opened
- **460** “future” schools planned to open within two years

<sup>a</sup> National Center for Education Statistics (NCES) Common Core of Data, for numbers and types of public elementary and secondary schools, for school year 2007—08.



# School Facilities Data (Cont'd.)

## Number of portable facilities <sup>a</sup>

- Based on a 2005 survey, principals reported:
  - 37 percent portable (temporary) buildings; and
  - 33 percent classrooms in portable (temporary) buildings.

## Age/renovation of existing school buildings <sup>b</sup>

- In 1999, the average age of the main instructional building(s) of public schools was 40 years, based on years since original construction.
- Across all schools reporting a major renovation since initial construction, the renovation had occurred on average 13 years ago.

<sup>a</sup> U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS) “Public School Principals’ Perceptions of Their School Facilities: Fall 2005,” FRSS 88, 2005 in Chaney, B., and Lewis, L. (2007). *Public School Principals Report on Their School Facilities: Fall 2005* (NCES 2007).

<sup>b</sup> U.S. Department of Education, National Center for Education Statistics, *Condition of America’s Public School Facilities: 1999*, <http://nces.ed.gov/surveys/frss/publications/2000032/index.asp?sectionID=7>



# School Safety Components

## The four phases of emergency management

- **Prevention-Mitigation:** Strategic design can prevent or reduce damage (e.g., restricting access makes it harder for intruders to enter K-12 campuses; designing wind resistant roofs can reduce a tornado's impact).
- **Preparedness:** Safety features, such as a reliable school-wide communications system can alert the school of an impending emergency so that they can take appropriate protective actions.
- **Response:** Accessible floor plans can make it easier for first responders to navigate a school site.
- **Recovery:** Repairing/remodeling a school to be safer following an incident may speed the return to learning.





# Elements of Strong Safety-Related School Design

## **Schools should be designed, built and remodeled to be:**

- More valued and readily perceived as relevant by the local community facility users;
- Easily monitored;
- Easily secured;
- Safe; and
- Constructive environments that foster positive culture and climate.



# Elements of Strong Safety-Related School Design (Cont'd.)

## Architect's Point of View

- What are five key school safety components that architects keep in mind when beginning to design a school building?
  1. Location;
  2. Access control;
  3. Supervision/surveillance;
  4. *Americans with Disabilities Act* standards; and
  5. Flow control.



# Architect's Point of View

**These are five basic components that architects who design school building usually address at the conceptual phase of building design.**

- 1. Location**—Is the school located in a safe place in terms of traffic, crime, and health hazards?
- 2. Access control**—Will it be easy to control access to the school and school grounds?
- 3. Supervision and surveillance**—Can school staff readily observe what is happening both inside and outside the school?
- 4. *Americans with Disabilities Act* standards**—Are the school and school grounds accessible to disabled and special needs students?
- 5. Flow control**—Are doors and passageways in and around the school of sufficient size to prevent crowding and consequent misbehavior?



# Vulnerability Assessments

## What is a vulnerability assessment?

- A vulnerability assessment is the ongoing process of identifying, evaluating and prioritizing risks and areas of weakness that could have adverse consequences for individual schools and school districts.
- It includes designing a system of accountability with measurable activities and timelines to address risks.



# Vulnerability Assessments (Cont'd.)

## Why conduct vulnerability assessments?

- Vital part of school emergency management planning.
- Focus on specific threats or hazards and how those weaknesses or threats might be mitigated through emergency management.
- Help determine which areas should be priorities of focus.
- Provide opportunity for schools to work with partners.
- Foster accelerated communication with populations that would be involved in a crisis situation (e.g., students, school personnel, first responders).



# Vulnerability Assessments (Cont'd.)

## What are key elements of vulnerability assessments?

- Team approach provides a perspectives
- Ensures schools consider all potential hazards
- Understanding and inventorying existing resources and strengths
- Conducting a walk-through of school grounds and facilities, surveying the school population and community for any known potential hazards, and looking at existing crime and school incidence data
- Reporting on the findings identified in the assessment
- Developing corrective actions and accountabilities
- Using the findings to inform and update emergency management plans



# Vulnerability Assessments (Cont'd.)

## Common problems identified by assessments:

- Too many entrances/exits that are not secured;
- Hidden areas;
- Poor indoor and outdoor lighting;
- Broken or damaged doors and/or windows;
- Classroom windows being covered;
- Emergency lighting not functional;
- Emergency generator not properly maintained;
- Exit lights that are burned out;
- Trip hazards on steps;
- Trip hazards on sidewalks; and
- Vehicular traffic pattern drop-off and pick-up zones.



# Solutions That Address Physical Design Weaknesses

## How should schools address and prioritize weaknesses identified by assessment?

1. After conducting the vulnerability assessment, compile and report results of vulnerabilities of all hazards assessed.
2. Use a risk matrix to determine which vulnerabilities and hazards would have the greatest consequences for each school.
3. Develop a written plan for addressing identified vulnerabilities and hazards.



# Solutions That Address Physical Design Weaknesses (Cont'd.)

## **When developing a risk matrix:**

- Principals, risk management specialist, superintendent or designee and appropriate emergency responder should be involved in determining what needs are a priority.
- Seek input from other sources e.g., schools that have had similar safety issues, community officials that have dealt with similar issues.
- Triage what needs to happen first and build upon each improvement as funds become available.

## **When developing a written plan:**

- Calculate cost and determine feasibility if appropriate funds are available.
- Keep local community officials aware of the plan for (safety) improvement. Attempt to nurture support from these officials.



# Risk Matrix Example

<b>Probability</b>	<b>High</b>			<b>Hurricane Tornado</b>
	<b>Medium</b>		<b>Flood</b>	<b>Violence</b>
	<b>Low</b>			<b>Hazmat Spill</b>
		<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Severity</b>				



# Solutions That Address Physical Design Weaknesses (Cont'd.)

## **Perceived barriers to making physical design improvements:**

- Design weaknesses;
- Lack of awareness or concern about weaknesses;
- Lack of adequate leadership on the issue; and
- Lack of funds.



**What obstacles do you anticipate in your district, and how can they be overcome?**



# Solutions That Address Physical Design Weaknesses (Cont'd.)

## Here are a few examples of how schools can overcome some of the perceived barriers:

- **Design weaknesses**—If they are critical safety issues, fix them at once. Otherwise, develop "work-around" to overcome them (e.g., lock unsupervised entries from the outside).
- **Lack of awareness or concern**—Have a credentialed individual perform a safety assessment.
- **Lack of adequate leadership**—Express concerns to the district superintendent or school board members.
- **Lack of funds**—Seek help from outside sources, such as local foundations; apply for state or federal grants, if available; pressure school board to reallocate funds; approach the local government to discuss the prospect of raising taxes for this explicit purpose.



# Solutions That Address Physical Design Weaknesses (Cont'd.)

## **The cost of solutions for addressing physical design weaknesses can range from:**

- No- to low-cost
  - keeping rooms locked when unoccupied
- Moderately costly
  - adding numbering to all interior and exterior doors
- Expensive
  - reconstruction of building entrance



## Institute strict procedures for key control.





## Solution 2

**Display classroom number on windows so they are readily visible from the street.**





# Solution 3

**Doors should be examined monthly and repaired as necessary and be instantly lockable.**





# Solution 4

**Secure unused lockers to prevent contraband storage, and provide locks to students for their own lockers.**





# Solution 5

## Secure gas tanks and consider fencing.





# Solution 6

**Restrict access to all rooms and spaces containing building wiring, equipment, and controls.**





# Solution 7

**Keep all unoccupied classrooms and other rooms locked when not in use (requires staff assistance).**





# Solution 8

## Secure janitorial closets.





# Solution 9

**Locate the school's fresh air intakes and ensure that idling vehicles do not park near them.**





# Solution 10

## Restrict access under mobile classrooms.





# Solution 11

**Fire hydrants on or near school grounds should be visible and unobstructed.**





## Solution 12

**Secure roof hatches, operable skylights and rooftop equipment doors and access panels.**





# Crime Prevention Through Environmental Design

## **There are four fundamental elements to Crime Prevention Through Environmental Design (CPTED):**

1. Natural access control;
2. Natural surveillance;
3. Territoriality; and
4. Maintenance.



# CPTED Element 1: Natural Access Control

- **Natural access control is the ability to restrict who enters or exits an environment.**
  - Use a single, clearly identifiable, point of entry.
  - Use fencing and gates to separate play areas from traffic.
  - Eliminate design features that provide access to roofs or upper levels.
  - Use low, thorny bushes beneath ground-level windows.



# CPTED Element 2: Natural Surveillance

- **Natural surveillance is the ability to easily see what is occurring in a particular setting.**
  - Create landscape designs that provide surveillance using the “4, 7” rule
    - Shrubs should not be taller than 4 feet and tree limbs no lower than 7 feet.
  - Leave window shades open.
  - Use convex mirrors to improve surveillance in hallways or around corners.
  - Provide proper lighting.



# CPTED Element 3: Territorial Reinforcement

- **Territoriality is the ability to demonstrate ownership property.**
  - Maintain landscaping.
  - Use signs and plantings to denote boundaries.
  - Place amenities, such as art work, seating or refreshments, in common areas.



# CPTED Element 4: Maintenance – Physical Plant

- **Maintenance is the ability to demonstrate respect for property.**
  - Inspect regularly.
  - Clean regularly.
  - Document and report problems.
  - Repair graffiti as soon as possible using the 3 R's approach
    - Record, Report & Remove



# CPTED Element 4: Maintenance – Policies & Procedures

- **Maintenance is the ability to carry out established policies and procedures.**
  - Meet with first responders annually to:
    - Conduct walk-through building/campus inspections; and
    - Review the school's emergency response plan.
  - Immediately report any building modifications to first responders.
  - Establish policies and accountability criteria for building/campus inspections.
  - Establish policies that shorten time frame for addressing needed repairs (liability is mitigated with a timely response).



# Interactive Assessment



**Identify both positives and negatives aspects of the building designs.**



# Interactive Assessment



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# Interactive Assessment

**Positive:** The clearly marked, obvious main entry with a number of windows for surveillance.

**Negative:** The large stone columns block the view from the reception desk, seriously compromising the view.





# Interactive Assessment (Cont'd.)



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# Interactive Assessment (Cont'd.)

Students here have a strong sense of ownership and territoriality because they helped design their alternative school.

Surveillance, however, is extremely limited. There is also no sign telling visitors the name of the school.





# Interactive Assessment (Cont'd.)



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# Interactive Assessment (Cont'd.)

This main entry has the office offset, on a rise, to the left. The desk is inset about 10 feet inside the door, and is staffed by student volunteers.

Therefore, office staff are too far away from intruders to stop them before they enter the central courtyard, and there is nothing physically blocking access.





# Interactive Assessment (Cont'd.)



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# Interactive Assessment (Cont'd.)

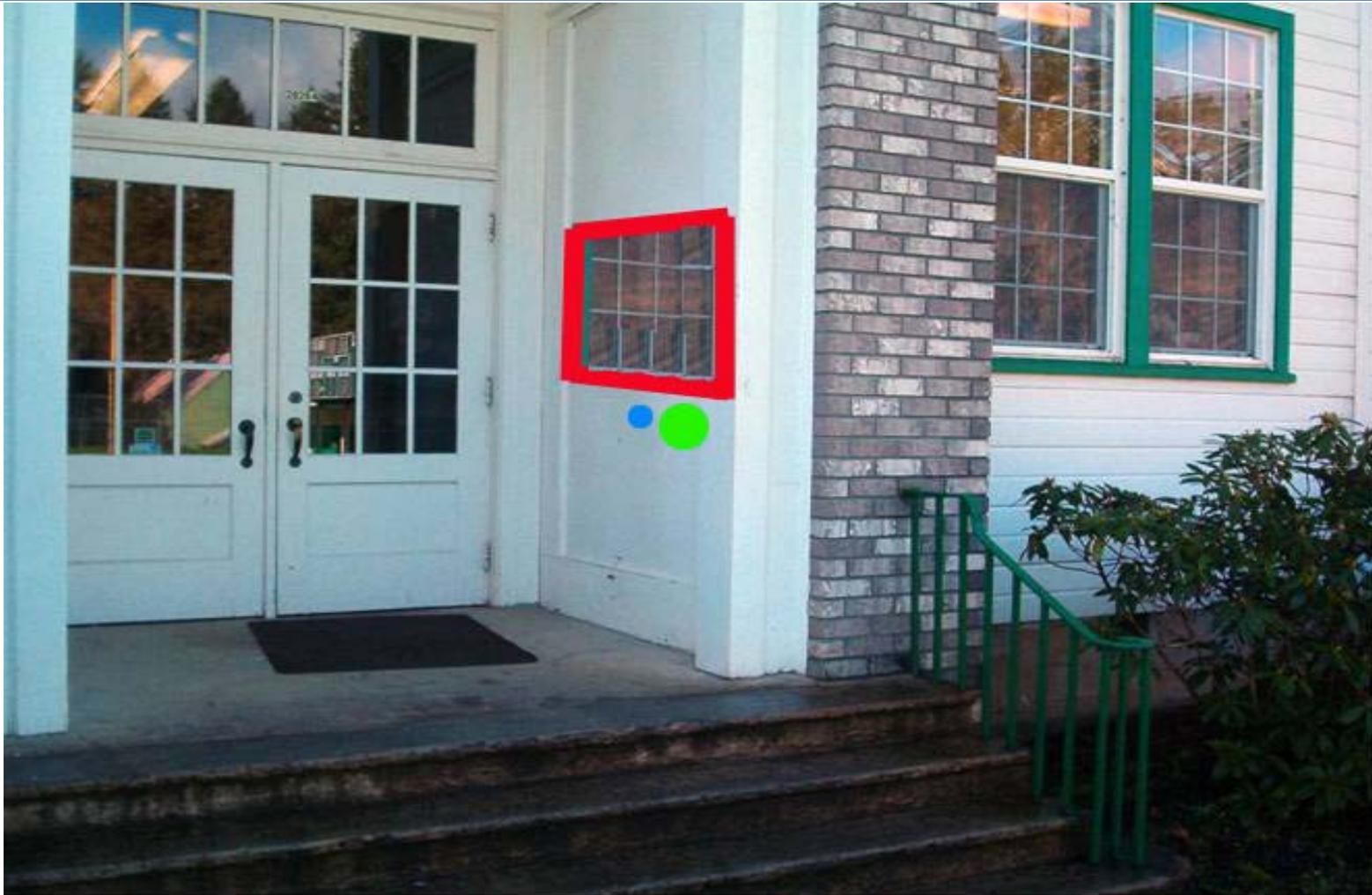
This secondary exit has great natural surveillance. Doors lock automatically, but panic bars permit egress.

However someone has propped open the door with a chair. If a design proves too inconvenient for teachers or students, they will undermine it—so take their needs into account!





# Interactive Assessment (Cont'd.)

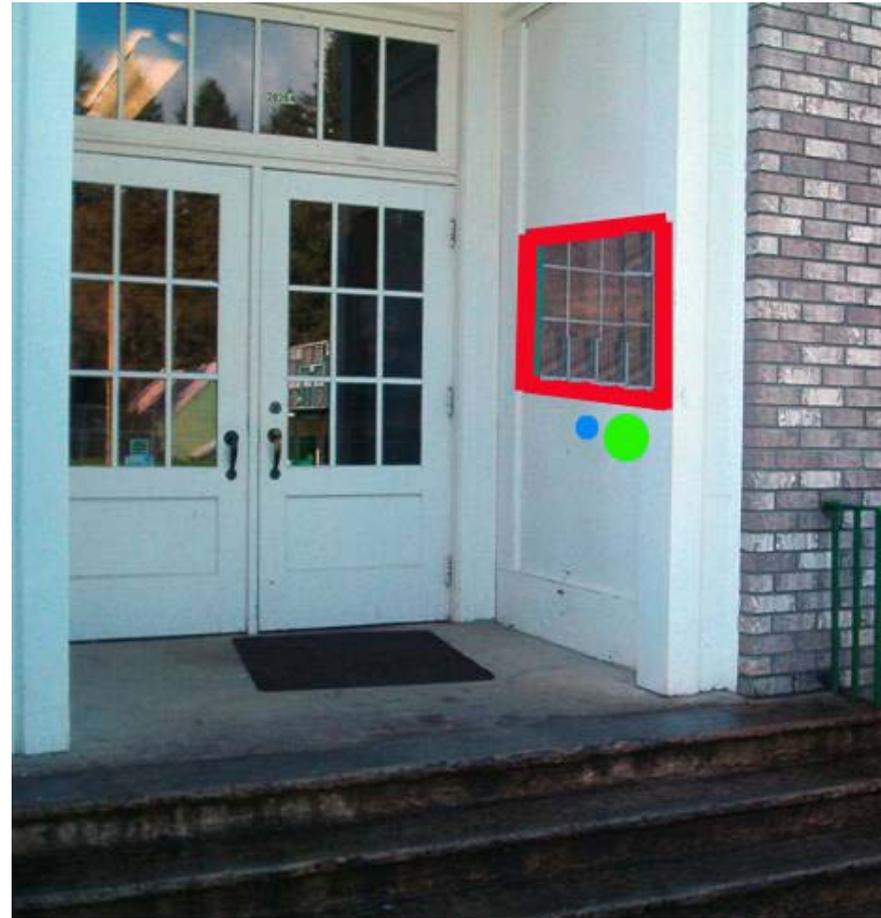




# Interactive Assessment (Cont'd.)

This conventional entry on an older school had no features allowing office staff to see people at the entry until after they entered the school.

Electronically redesigning the entrance by adding a window and intercom shows that these additions that would mitigate this design weakness. Doors could be controlled electronically.





# Frequently Asked Questions

**Q. What role does the school district's liability insurance carrier play in safe physical management?**

A. Most insurance carriers have a risk management specialist who could assist schools in addressing physical plant safety practices.



# Frequently Asked Questions

## **Q. Should schools create vulnerability assessment teams?**

**A.** Yes. Vulnerability assessment teams are an important part of creating a unified and comprehensive effort for assessing risks and hazards.

Teams can be used to:

- establish goals and objectives for assessment,
- develop a timeline for assessments,
- assign roles and responsibilities for next steps,
- monitor progress on action items, and
- update and revise assessments as needed.



# Frequently Asked Questions

## Q. Who should be involved in the team?

- A. Administrators can serve as leaders in vulnerability assessment efforts and facilitate formation of teams by selecting and coordinating or supporting team members, such as:
- general and special educators,
  - school resource officers and/or security officers,
  - administrators,
  - school nurses,
  - clerical and reception staff,
  - paraprofessionals,
  - guidance counselors,
  - coaches,
  - cafeteria and facilities staff, and
  - bus drivers.
- Involve members of the community outside of the school.
  - Consider involving students and family members in the vulnerability assessment process.



# Frequently Asked Questions

## **Q. What are some of the key factors in maintaining a safe and healthy learning environment?**

A. Some of the key factors include supervision of:

- The physical plant;
- The students; and
- Visitors who come on campus.



# Frequently Asked Questions

## **Q. What is the first step schools should take before conducting an assessment?**

- A.** The first step schools should take is to determine what assessment tool best fits the needs of the school (or school district).
- As schools continue to plan and prepare for critical events that could have severe consequences, identifying the appropriate vulnerability assessment tool(s) is an important step for helping schools to understand from what they are at risk and just how seriously they could be impacted.



# Frequently Asked Questions

## **Q. How do schools get buy-in from administrators to conduct a vulnerability assessment and follow-up appropriately?**

- A.** Vulnerability assessments demonstrate to parents and the school community that district administrators are concerned about the safety of students and staff and they are taking steps to address vulnerabilities.
- Buy-in usually is enhanced when liability enters the picture.
  - Not to conduct frequent assessments is negligent.
  - Once concerns have been identified the onus falls upon the school district to address the identified concerns.



# Frequently Asked Questions

## **Q. What if a school conducts an assessment but it is not able to implement the suggested change?**

- A.** It is incumbent on the school district to address any critical safety need immediately.
- In cases such as this, the superintendent/school board will need to make the decision whether to address identified safety issues or not.
  - Such decisions need to be made in collaboration with the school board's legal counsel.



- 1. Primary elements of strong safety-related school design**
- 2. School vulnerability assessments**
- 3. Solutions that address physical design weaknesses**
- 4. Four elements of Crime Prevention Through Environmental Design (CPTED)**



## REMS Technical Assistance Center

- **Guide to School Vulnerability Assessments**

[http://rems.ed.gov/views/documents/VA\\_Report\\_2008.pdf](http://rems.ed.gov/views/documents/VA_Report_2008.pdf)

## Local volunteer organizations, PTA/PTO

- Assist with minor repairs, beautification, landscaping, etc.



## American Clearinghouse on Educational Facilities

- **Low-Cost Security Measures for School Facilities**
- **Mitigating Hazards in School Facilities**  
**School Safety Assessment Guides**
- **School Safety and Security PK-12 Facilities Issues**
- <http://www.acefacilities.org>



## National Institute of Justice

- **The Appropriate and Effective Use of Security Technologies in U.S. Schools Guide**  
<http://www.ojp.usdoj.gov/nij/pubs-sum/178265.htm>
- **Crime Prevention Through Environmental Design and Community Policing**  
<http://www.ojp.usdoj.gov/nij/pubs-sum/157308.htm>

## The Virginia Department of Education's Checklist for the Safety and Security of Buildings and Grounds

- <http://www.pen.k12.va.us/go/VDOE/Instruction/schoolsafety/safetyaudit.pdf>



# Presentation Credits

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The REMS TA Center was established in October 2007 by the U.S. Department of Education, Office of Safe and Healthy Students.

The center supports schools and school districts in developing and implementing comprehensive emergency management plans by providing technical assistance via trainings, publications and individualized responses to requests.

For additional information about school emergency management topics, visit the REMS TA Center at <http://rems.ed.gov> or call 1-866-540-REMS (7367). For information about the REMS grant program, contact Tara Hill ([tara.hill@ed.gov](mailto:tara.hill@ed.gov)).

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