School Safety and Physical Design

U.S. Department of Education, Office of Safe and Drug-Free Schools
Potomac Center Plaza, 550 12th Street, SW, 10th Floor
Washington, DC 20202

Presentation Goals

I. Look at how physical design affects school safety

II. Provide data on school facilities

III. Review elements of strong safety-related school design

IV. Discuss school vulnerability assessments

V. Highlight solutions that address physical design weaknesses

VI. Outline the four elements of Crime Prevention Through Environmental Design (CPTED)

VII. Conduct an interactive activity

VIII. Answer frequently asked questions

IX. Provide resources for further planning

Presentation Goals

I. Look at how physical design affects school safety

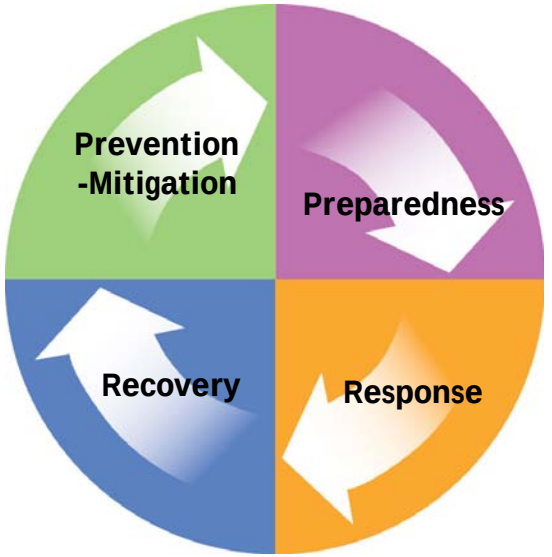
I. School Safety Components

There are several components to comprehensive school safety all of which fall into the four phases of emergency management (Prevention-Mitigation, Preparedness, Response and Recovery), including, but not limited to:

- Policies (e.g., federal & state regulations, local board of education policies, school-based policies)
- Procedures (e.g., emergency protocols, drills and exercises, physical plant assessments)
- Programs (e.g., bullying prevention programs)
- Physical design (e.g., identification of inherent safety issues as well as physical access control)
- Partnerships (e.g., first responders, mental/public health)
- Training (e.g., evacuating students with disabilities)

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.



Presentation Goals

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II. **Provide data on school facilities**

II. School Facilities Data

Number of schools in the U.S.

- 97,382 - Public elementary and secondary schools (2005—06)[a]
- 28,384 - Private elementary and secondary schools (2003—04)[b]
- 3,294 - Public charter schools nationwide (2004—05)[b]

Number of new school buildings in 2005—06 school year[a]

- 2,291 new public schools were opened
- 951 “future” schools were planned to open within two years

[a] National Center for Education Statistics (NCES) Common Core of Data, for numbers and types of public elementary and secondary schools, for school year 2005—06.

[b] U.S. Census (2007, June 14) *Facts for Features*, “Back to School: 2007—2008.”

II. School Facilities Data (Cont'd.)

Number of portable facilities[a]

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

Age/renovation of existing school buildings[b]

- 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 11 years ago.

[a] 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).

[b] 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

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III. Review elements of strong safety-related school design

III. Elements of Strong Safety-related School Design

Schools should be designed, built and remodeled to be:

- More effective learning environments;
- 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.

III. Elements of Strong Safety-related School Design (Cont'd.)

Activity 1: Designing a Safe School

Work with participants at your table to design the ideal safe school:

- Draw the school or list the most important characteristics.
- Be creative.
- Money is no object.
- Consider common problems as well as worst-case scenarios.

III. 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.

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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.

IV. Vulnerability Assessments (Cont'd.)

Why conduct vulnerability assessments?

- They are an important and vital part of school emergency management planning.
- They focus on a particular school's susceptibility to specific threats or hazards and how those weaknesses or threats might be mitigated through emergency management.
- They inform all four of the interconnected phases of emergency management, especially the prevention-mitigation phase, to help determine which areas should be priorities of focus.

IV. Vulnerability Assessments (Cont'd.)

Why conduct vulnerability assessments?

- They provide opportunity for schools to work with partners (e.g., first responders, mental and public health officials, local government, etc.) to identify, correct, and prevent problems.
- They foster accelerated communication with populations that would be involved in a crisis situation (e.g., students, school personnel, first responders).

IV. Vulnerability Assessments (Cont'd.)

Why conduct vulnerability assessments?

- Historically, site weaknesses have made it easier for violence to occur and harder to intervene quickly.
  - Offenders had easy access into school.
  - Victims had inadequate escape paths.
  - Staff were unable to spot threats in time.
  - Communication was inadequate.
- Site weaknesses, such as these, are often identified in a vulnerability assessment.

IV. Vulnerability Assessments (Cont'd.)

What are key elements of vulnerability assessments?

- Utilizing a team assessment approach to bring a variety of perspectives to the assessment process
- Ensuring that schools consider all potential hazards that might affect the school and surrounding community
- Understanding and inventorying not only vulnerabilities, but also the existing resources and strengths that are available to prevent or mitigate the impact of a vulnerability

IV. Vulnerability Assessments (Cont'd.)

What are key elements of vulnerability assessments?

- 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, and using the findings to inform and update emergency management plans

IV. 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.

IV. Vulnerability Assessments (Cont'd.)

Unique problems identified by assessments:

- Many schools in the South are heated by propane tanks that are stored on school grounds.
- In older schools, the principal's office is not near the school's main entrance.
- When some schools were initially built, there were no buildings near or around the campus; years later major development has occurred, thus increasing personal and vehicular traffic.

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V. Highlight solutions that address physical design weaknesses

V. 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.

V. 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.

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

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

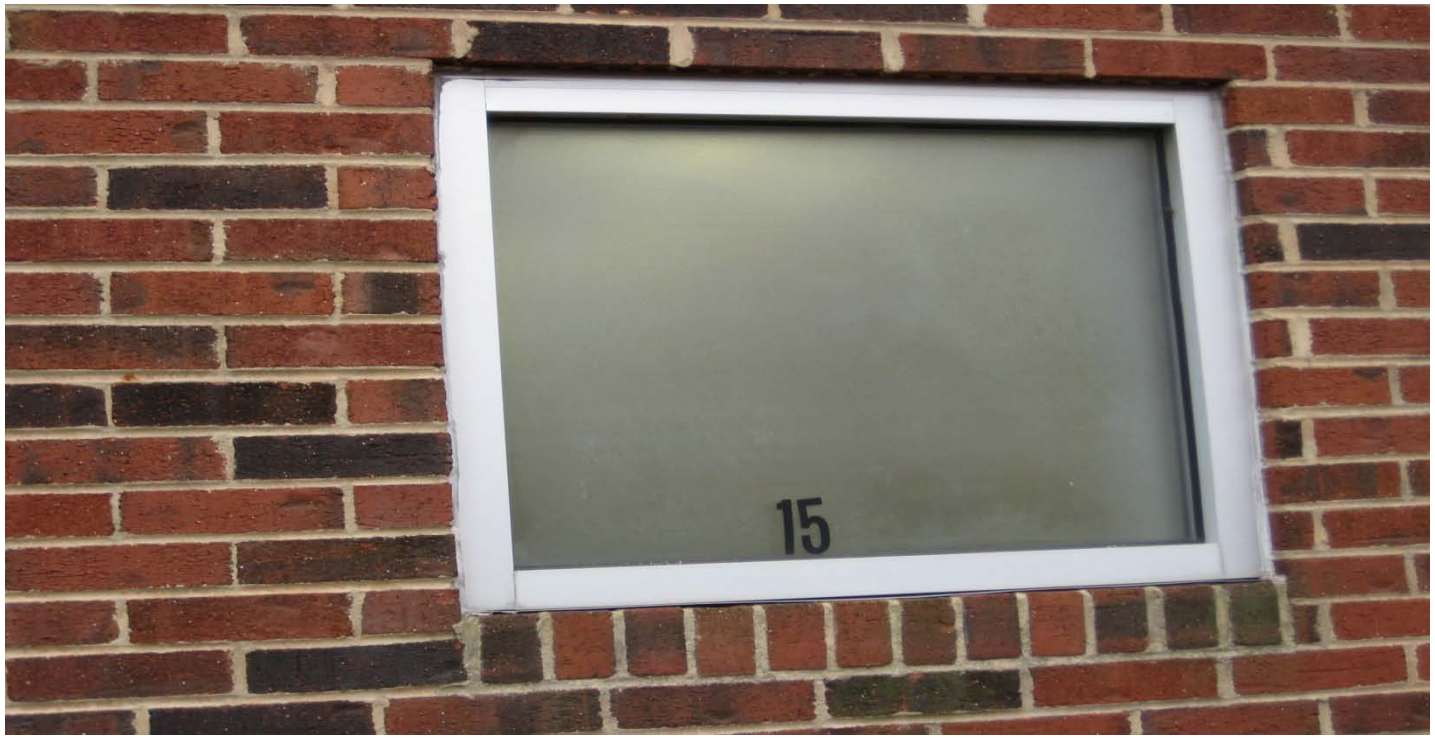
- No- to low-cost (e.g., keeping rooms locked when unoccupied)
- Moderately costly (e.g., adding numbering to all interior and exterior doors)
- Expensive (e.g., reconstruction of building entrance)

V. Solutions That Address Physical Design Weaknesses: Solution 1

Institute strict procedures for key control.

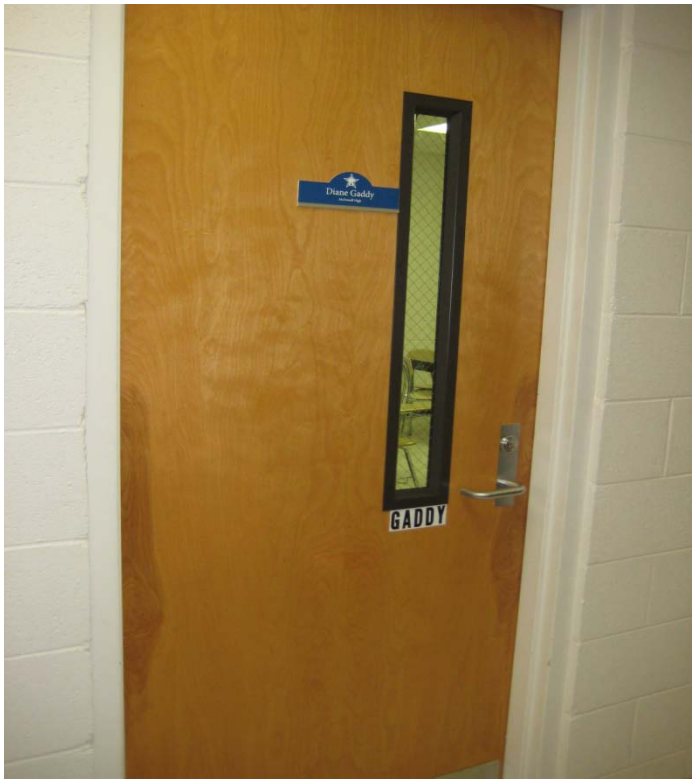
V. Solutions That Address Physical Design Weaknesses: Solution 2

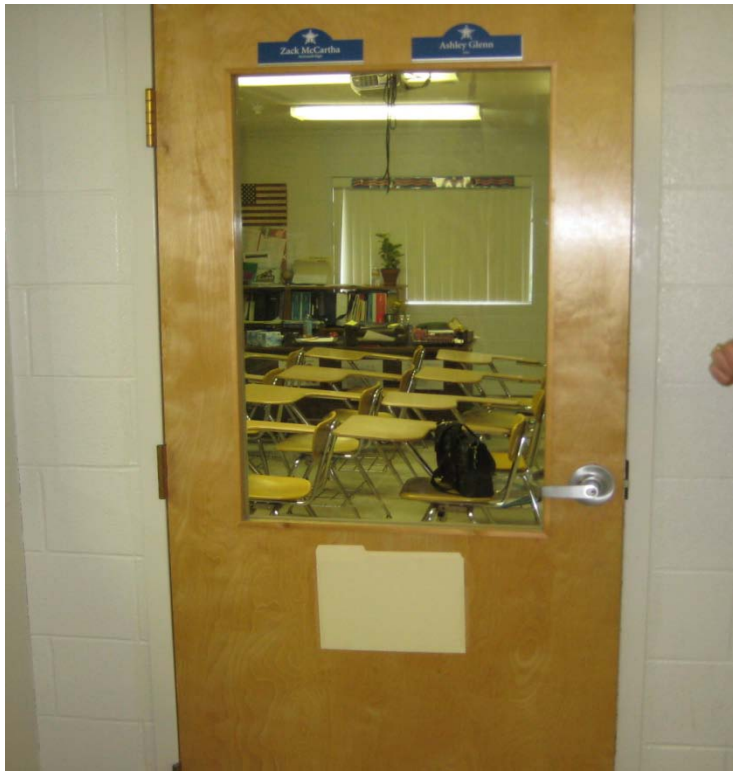
Display classroom number on windows so they are readily visible from the street.



V. Solutions That Address Physical Design Weaknesses: Solution 3

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



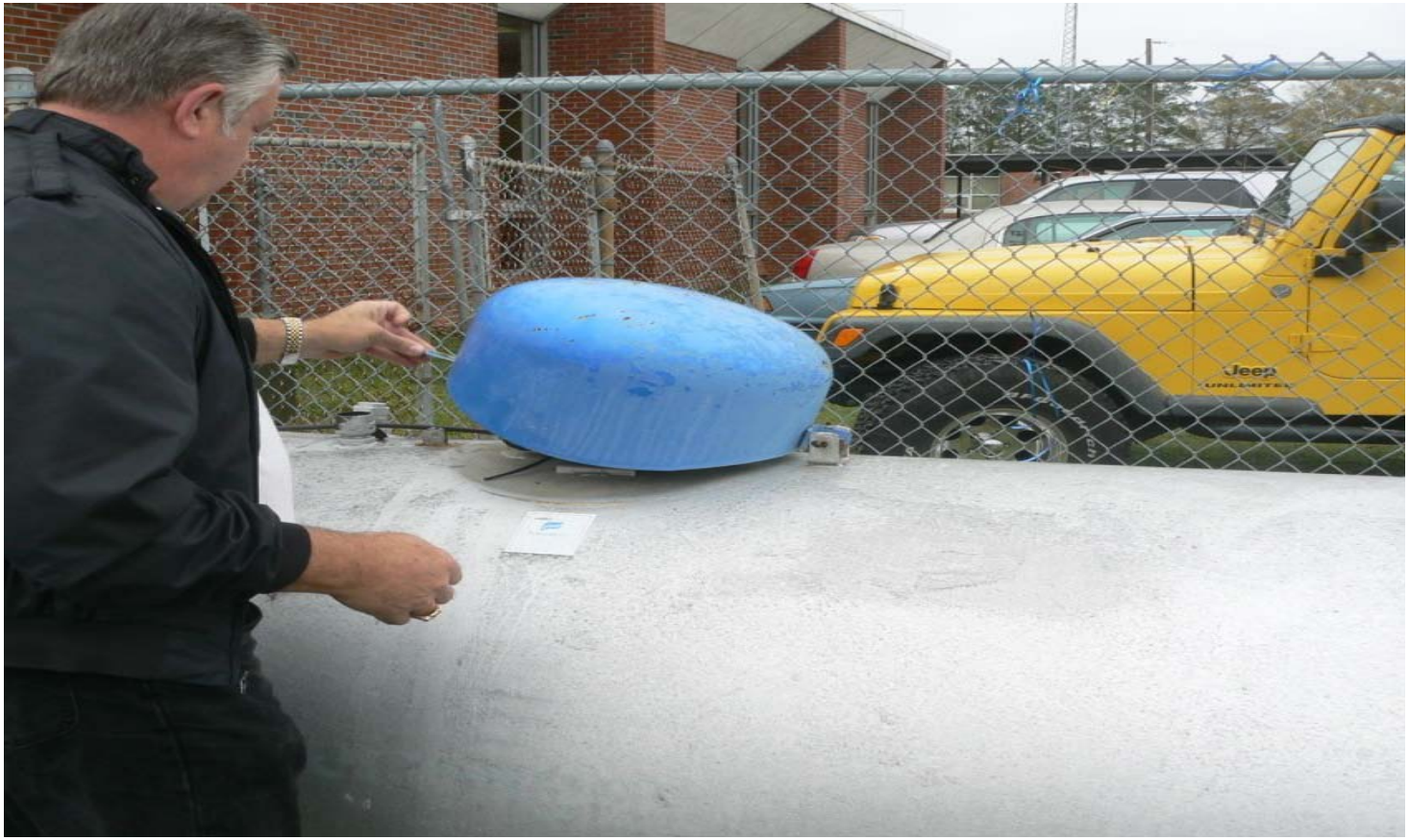


V. Solutions That Address Physical Design Weaknesses: Solution 4

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

V. Solutions That Address Physical Design Weaknesses: Solution 5

Secure gas tanks and consider fencing.

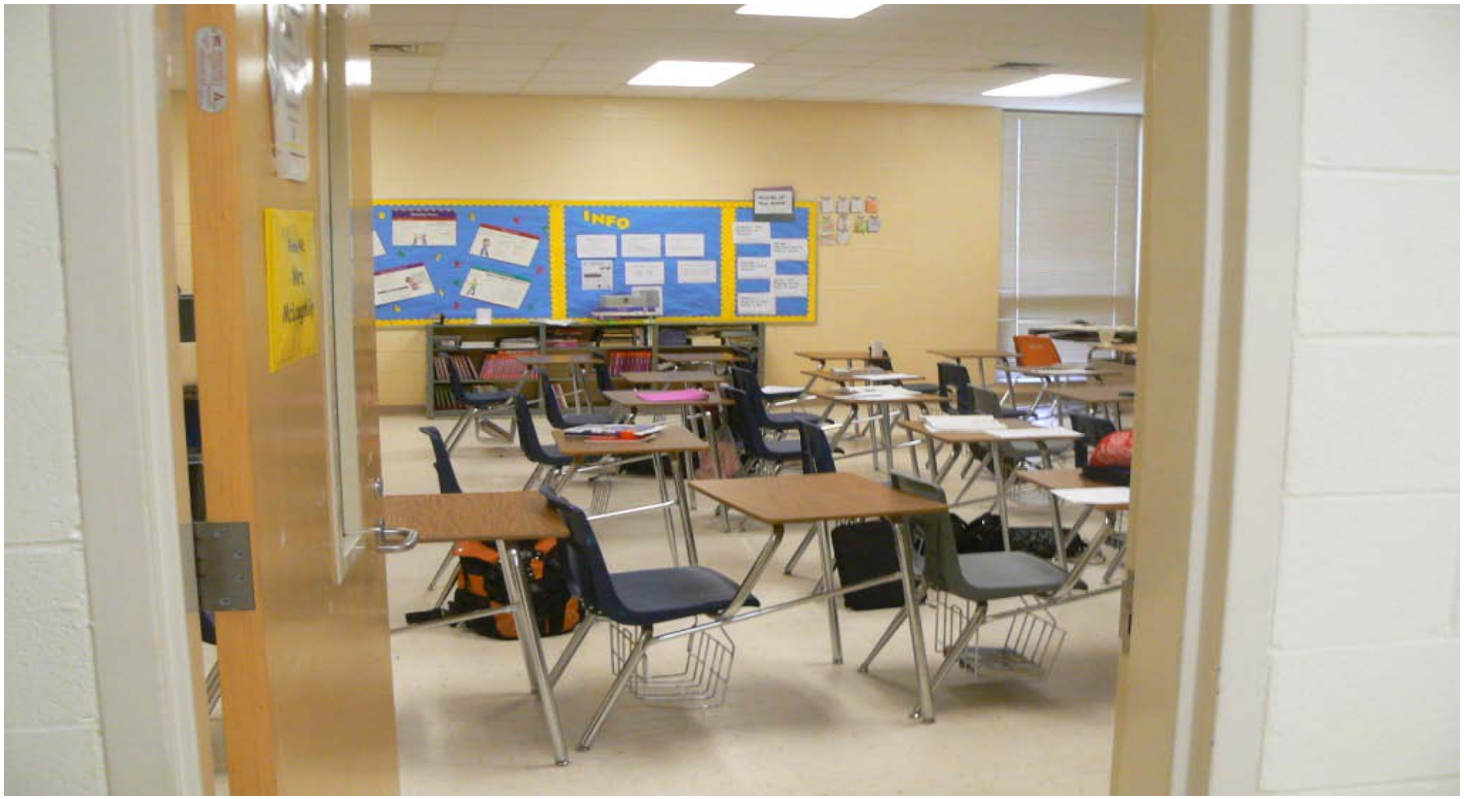


V. Solutions That Address Physical Design Weaknesses: Solution 6

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

V. Solutions That Address Physical Design Weaknesses: Solution 7

Keep all unoccupied classrooms and other rooms locked when not in use.

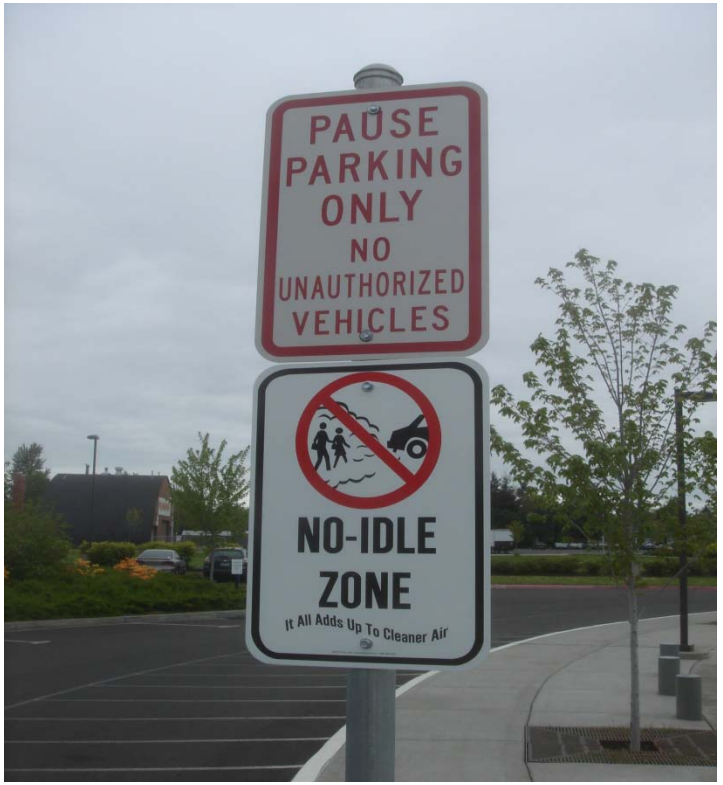


V. Solutions That Address Physical Design Weaknesses: Solution 8

Secure janitorial closets.

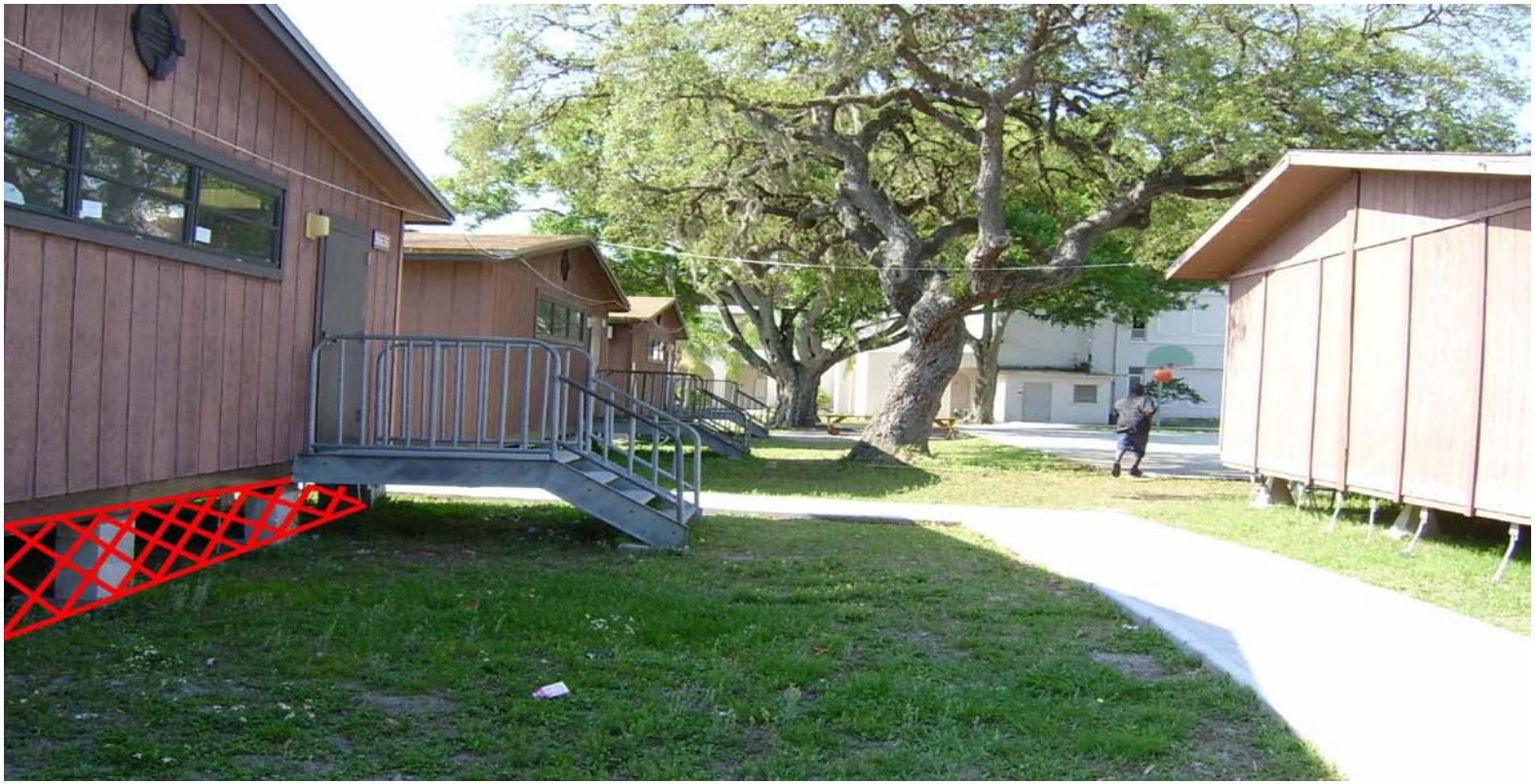
V. Solutions That Address Physical Design Weaknesses: Solution 9

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



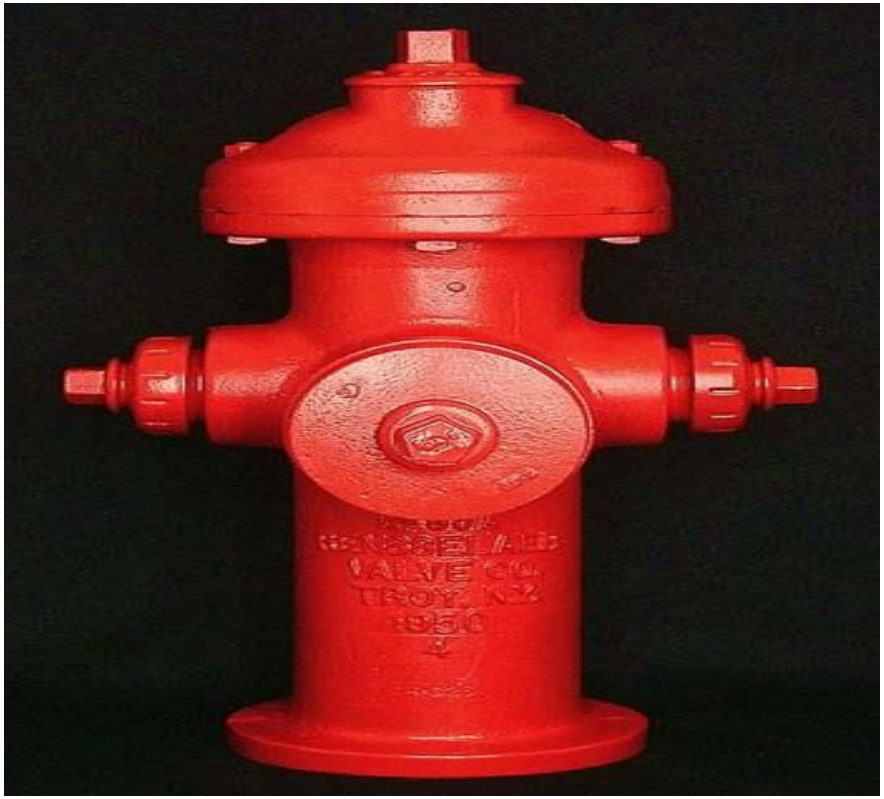
V. Solutions That Address Physical Design Weaknesses: Solution 10

Restrict access under mobile classrooms.



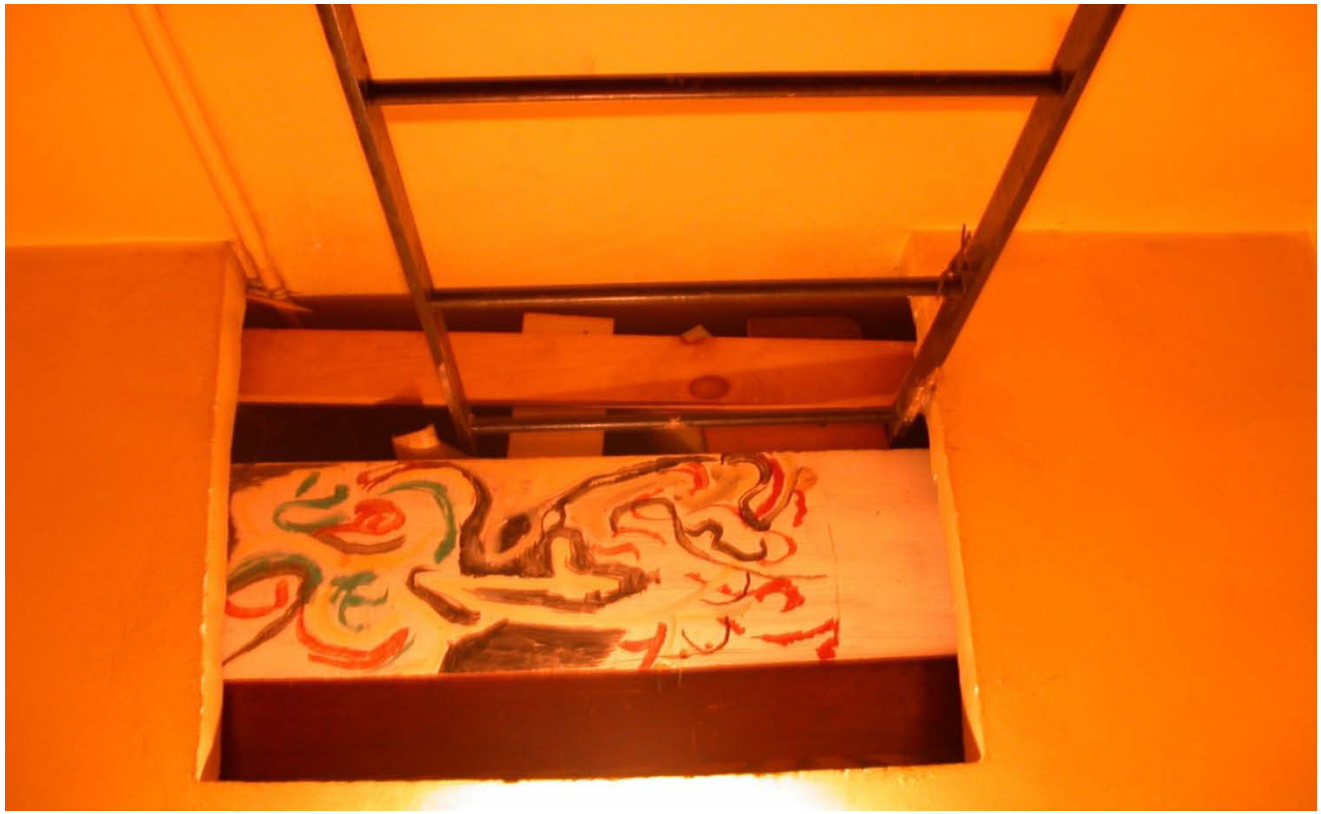
V. Solutions That Address Physical Design Weaknesses: Solution 11

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



V. Solutions That Address Physical Design Weaknesses: Solution 12

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



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VI. Crime Prevention Through Environmental Design

- CPTED is a multidisciplinary approach to deterring criminal behavior 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.

VI. CPTED Element 1: Natural Access Control

- **Natural access control** is the ability to restrict who enters or exits an environment.
- Examples include but are not limited to:
  - 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.

VI. CPTED Element 2: Natural Surveillance

- **Natural surveillance** is the ability to easily see what is occurring in a particular setting.
- Examples:
  - Create landscape designs that provide surveillance (the 4, 7 rule).
  - Leave window shades open.
  - Use convex mirrors to improve surveillance in hallways or around corners.
  - Provide proper lighting.

VI. CPTED Element 3: Territorial Reinforcement

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

VI. CPTED Element 4: Maintenance – Physical Plant

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

VI. CPTED Element 4: Maintenance – Policies & Procedures

- **Maintenance** is the ability to carry out established policies and procedures.
- Examples:
  - 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).

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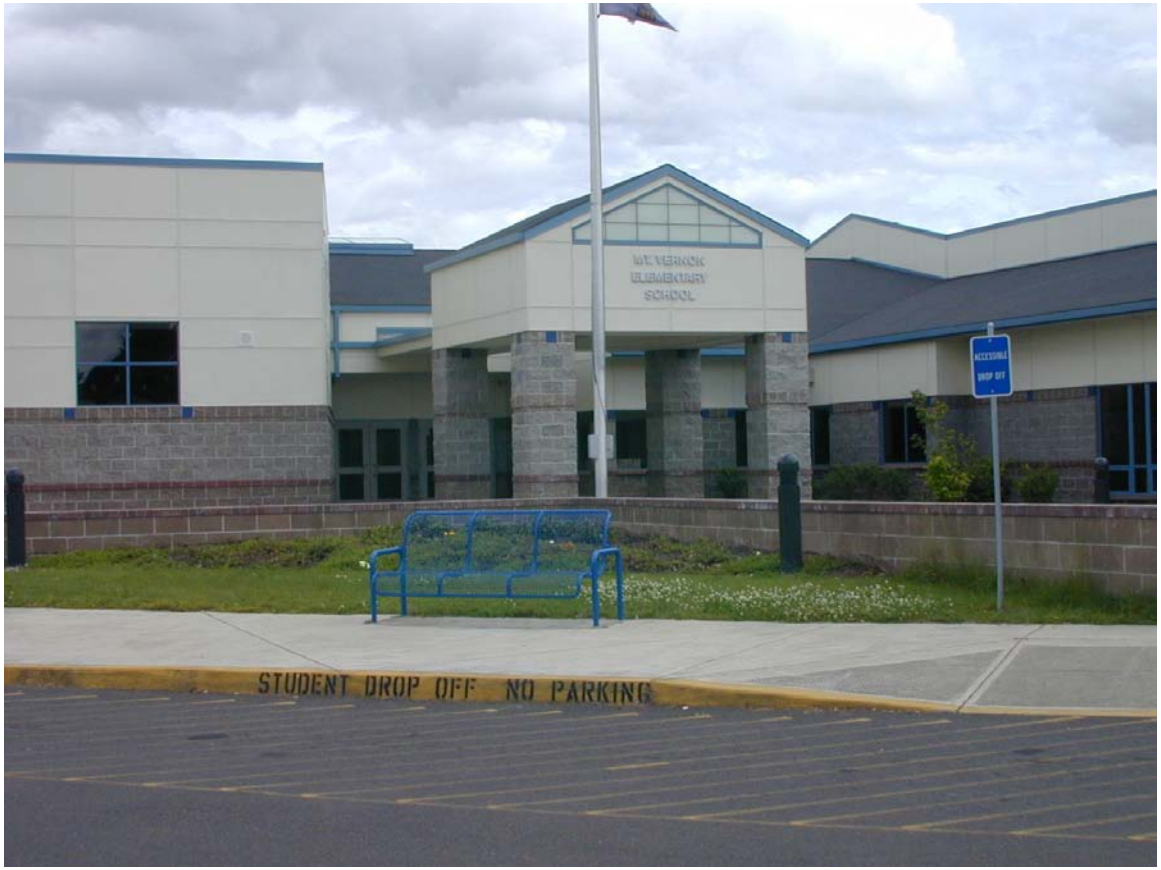
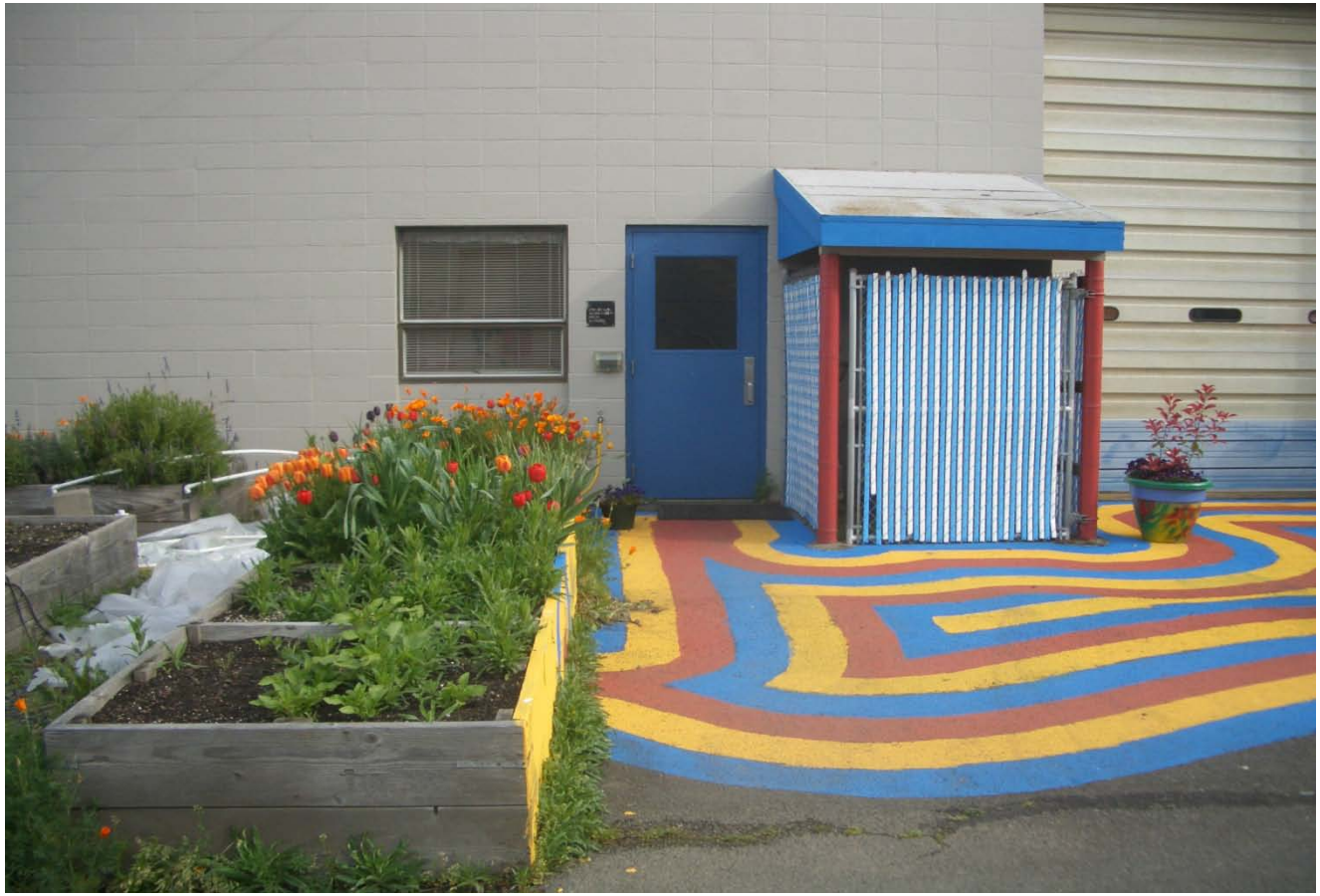
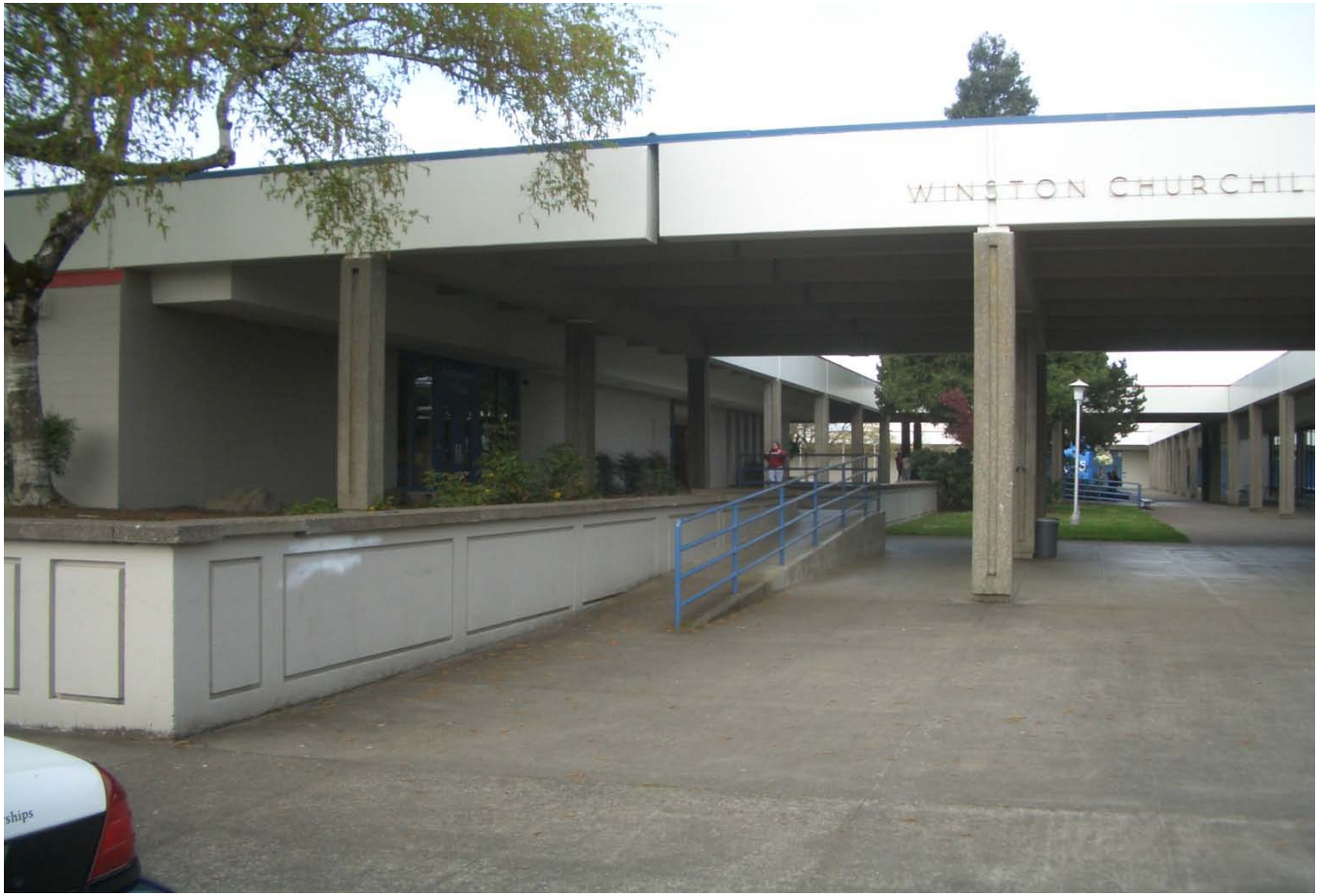
VII. Interactive Assessment



VII. Interactive Assessment (Cont'd.)



VII. Interactive Assessment (Cont'd.)



VII. Interactive Assessment (Cont'd.)

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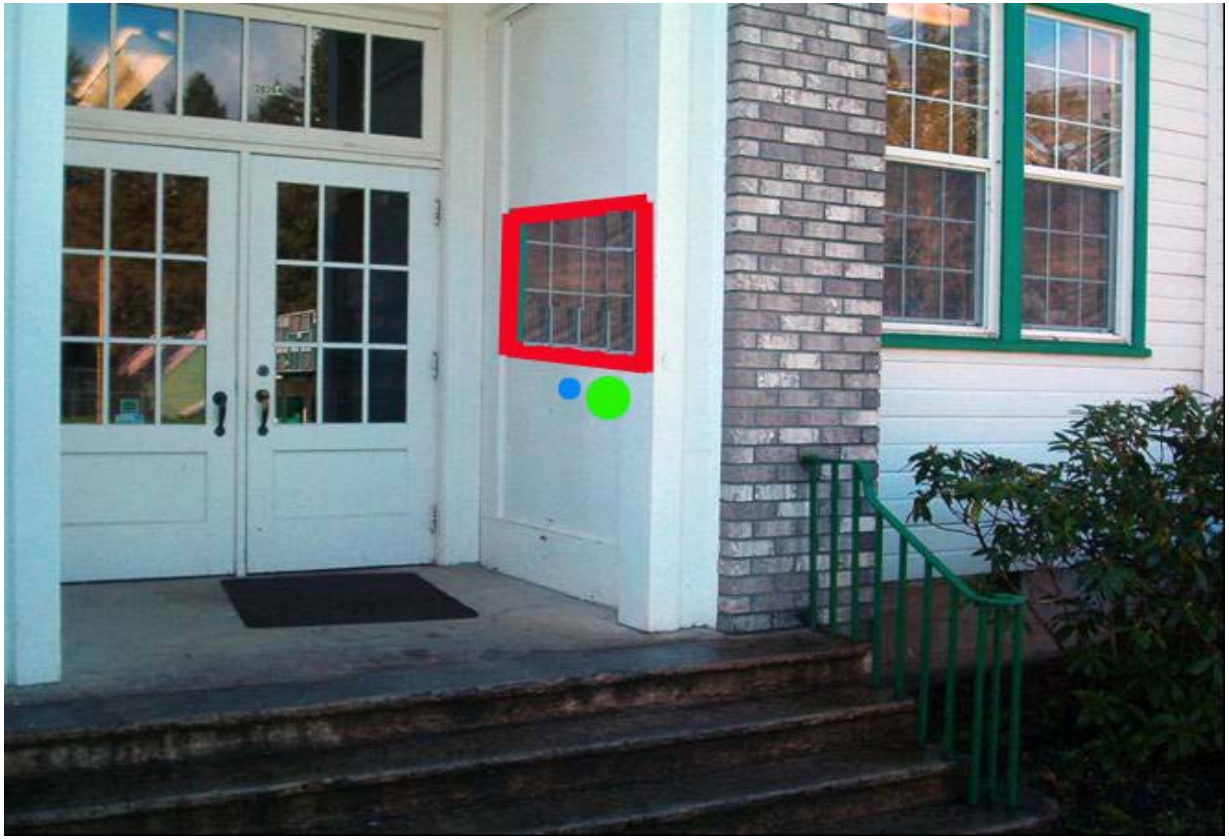

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VIII. Frequently Asked Questions

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.

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.

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 school personnel 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 can provide valuable input into the daily occurrences within schools. Involve members of the community outside of the school. Consider involving students and family members in the vulnerability assessment process.

VIII. 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.

VIII. 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.

VIII. 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.

VIII. Frequently Asked Questions

Q. What if a school conducts an assessment but it is not able to implement the suggested change? Does that have liability implications?

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.

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IX. Resources

National Clearinghouse for Educational Facilities

- Low-Cost Security Measures for School Facilities
  http://www.edfacilities.org/pubs/low_cost_measures.pdf
- Mitigating Hazards in School Facilities
  http://www.ncef.org/pubs/mitigating_hazards.pdf
- School Safety Assessment Guides
  http://www.ncef.org/pubs/pubs_html.cfm?abstract=mitigating2
- School Safety and Security PK-12 Facilities Issues
  http://www.edfacilities.org/rl/safety_security.cfm

National Crime Prevention Institute, Crime Prevention Through Environmental Design

- http://www.cpted-watch.com/

IX. Resources (Cont'd.)

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

Thank you to the following persons for their role as lead authors of this presentation:

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- **William Brenner**, Director, National Clearinghouse for Educational Facilities (Washington, D.C.);
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