
SCHOOL SECURITY THREAT AND VULNERABILITY ASSESSMENTS

Presented by:

Jeff Straub, AIA, REFP, LEED AP^{BD&C}, Principal

Randy Davis, Principal

of

Crabtree, Rohrbaugh & Associates



Background on School Security

Threat and Vulnerability Assessments – What they are and what they are not.

Cost Benefit Analysis to determine active and passive security measures for educational facilities.

School Security measures in the built environment.

- **Jeff Straub, AIA, REFP, LEED AP BD&C**

- Director and Principal at Crabtree, Rohrbaugh & Associates
- Designed over \$450 Million in Educational Facilities
- Registered Architect in 8 States throughout the Mid-Atlantic Region
- Multiple American Institute of Architects Award Winning Designs
- Sustainable Design (Has led 10 LEED Projects to Completion)
 - 2013 USGBC Public Facility of the Year, Sudlersville Middle School, Queen Anne's County, Maryland
 - 2012 USGBC Innovative Design Award, Midd-West School District
- Crime Prevention Through Environmental Design (CPTED) Certification Process
- NICP Member- National Institute of Crime Prevention
- Registered Educational Facility Planner
- County Courthouse, Public Safety and Private Office Experience

About your speaker....



Crabtree, Rohrbaugh & Associates

Corporate Information



- **Founded 1984**
- **Client Oriented Approach**
- **Recent Recognition**
 - Engineering News Record – Top 500
 - Architectural Record – Top 150
- **Education Experience**
 - \$3 Billion in Educational Design throughout Mid-Atlantic
 - Certified Educational Facility Planners
- **Security Experience**
 - Education
 - Higher Education
 - Judicial Facilities
 - Correctional Facilities
 - Corporate Office
 - Data Centers
 - Mission Critical Facilities
 - Public Safety Centers/ 911 Centers

Background

Questions? Please don't hesitate to ask a question throughout the presentation





Background

- Multiple National High Profile Incidents
 - Sandy Hook
 - Columbine
 - Amish School Murders
 - Virginia Tech
- Need for review of School Security Measures
- Determine which measures are appropriate to identified threats

Definition of Violence

The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation.

World Report on Violence and Health, 2002



Who are the offenders?

- **Parents**
 - **Students**
 - **Ex-Students**
 - **‘Strangers’**
 - **Other Staff**
-
- **Offenders often do not look like “bad guys”**



Reflections on Sandy Hook

It is time for voices of reason and candor on school security.

NBC flew Kenneth S. Trump, president of National School Safety and Security Services, to Connecticut the day after the Sandy Hook Elementary School shootings for a live interview on The Today Show. He provided a number of cable news interviews throughout the day. "Nothing was more powerful than seeing firsthand the shell-shocked faces of Newtown's residents and the images of a picture-perfect American community that will be forever changed," Trump said. The following are his thoughts for district administrators.

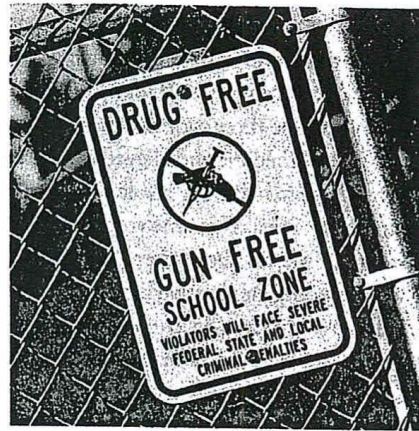
Let's first start with a look at what we do not need to do differently after Sandy Hook. We all heard a lot of potential solutions or attempts at solutions, and some of the more irrational and opportunistic calls for actions have included:

- Arming teachers and school support staff, an idea seized upon by gun rights special interests after gun control special interests leached onto the Sandy Hook shooting to further their political agenda;
- Equipping kids with bulletproof backpacks and teachers with bulletproof vests, ideas floated by product vendors and some desperate parents, among others; and
- Teaching students to throw objects at armed gunmen and then attack them, an idea promoted by a Texas law enforcement tactical training company.

These and similar proposals raise lengthy lists of implementation questions and issues that illustrate a lack of understanding of school operations, school climate, and student age and developmental issues.

Voices of Reason

Based upon reports, Sandy Hook Elementary School had many of the best practices in school safety in place. From a buzzer-camera-intercom at the locked front door to trained staff and lockdown drills, the school appeared to be follow-



ing practices we expect in a post-Columbine era of school safety. While sadly we did not see the desired outcome, many security experts believe that had these measures not been in place, the loss of life would have been even greater.

Throwing away the playbook of best practices in school safety is not the answer. We do, however, have to make sure that schools are fully implementing the fundamentals in this playbook. Here are some key security questions for your district:

- What steps have you taken to reduce access to your school including locking doors, training staff to greet and challenge strangers, improving door hardware and implementing physical security measures?

- Are your crisis teams named on paper only or do they meet regularly?

- When you conduct lockdown, evacuation, fire, and other drills, how often do you diversify those drills?

Our assessments and observations suggest that these and many other fundamentals in school safety are missing or are lax in many schools.

Voices of Reform

While we should not turn school security best practices upside down, the Sandy Hook attack should force us to acknowledge three major takeaways:

1. The day before the Sandy Hook shootings, you could hardly pay most school boards and administrators to get excited over school safety. In fact, many district leaders have been cutting security measures for years. Yet the day after the shootings, people could not stop talking about it. It is long past time for us to keep school safety on the front burner, when there is not a crisis in the headlines and parents are not demanding answers on student safety questions.

2. We have to painfully acknowledge that in spite of our best efforts, some tragedies will not be prevented. School leaders must take all reasonable steps to reduce security risks, while also preparing to effectively manage crises that cannot be prevented.

3. School leaders must have a greater voice with Congress in advocating for restoring eliminated federal funds for security and emergency preparedness. But boards and superintendents must also stop looking at school safety largely as a grant-funded luxury. Just as schools budget for food services, transportation, custodial, and other support services, they need to incorporate security, training, and preparedness measures into their annual operating budgets.

Our commitment to school security and preparedness rests not in our rhetoric, but in our actions and budgets. It is time we stop talking the talk and start walking the walk—for the long haul. DA

Please feel free to join the discussion online at www.DistrictAdministration.com.

Kenneth S. Trump is president of National School Safety and Security Services, and is author of "Practical School Security and Emergency Preparedness Planning" (Corwin Press, 2011).

Security and Vulnerability Assessments

- Avoid Knee Jerk Reactions (Post Sandy Hook conversations in the National Press)
 - Arming Teachers
 - Equipping Kids with BulletProof Backpacks
 - Teaching Students to throw objects at Armed Gunmen
- Key Security Questions for your District
 - What steps have you taken to reduce access to your buildings?
 - Do these include locking doors, training staff to greet and challenge strangers, improving door hardware and implementing security measures?
 - Are your crisis teams named on paper only or do they meet regularly?
 - When you conduct lockdown, evacuation, fire or other drills, how often do you diversify these drills?



Vulnerability Assessments

Security and Vulnerability Assessments - Terminology

- **Vulnerability**: A flaw or weakness in system security procedures, design, implementation, or internal controls
- **Threat**: The potential for a specific vulnerability to be exercised either intentionally or accidentally
- **Control**: measures taken to prevent, detect, minimize, or eliminate risk
- **Vulnerability Assessment**: The process of identifying, quantifying, and prioritizing (or ranking) the vulnerabilities in a system.

Threat Assessment



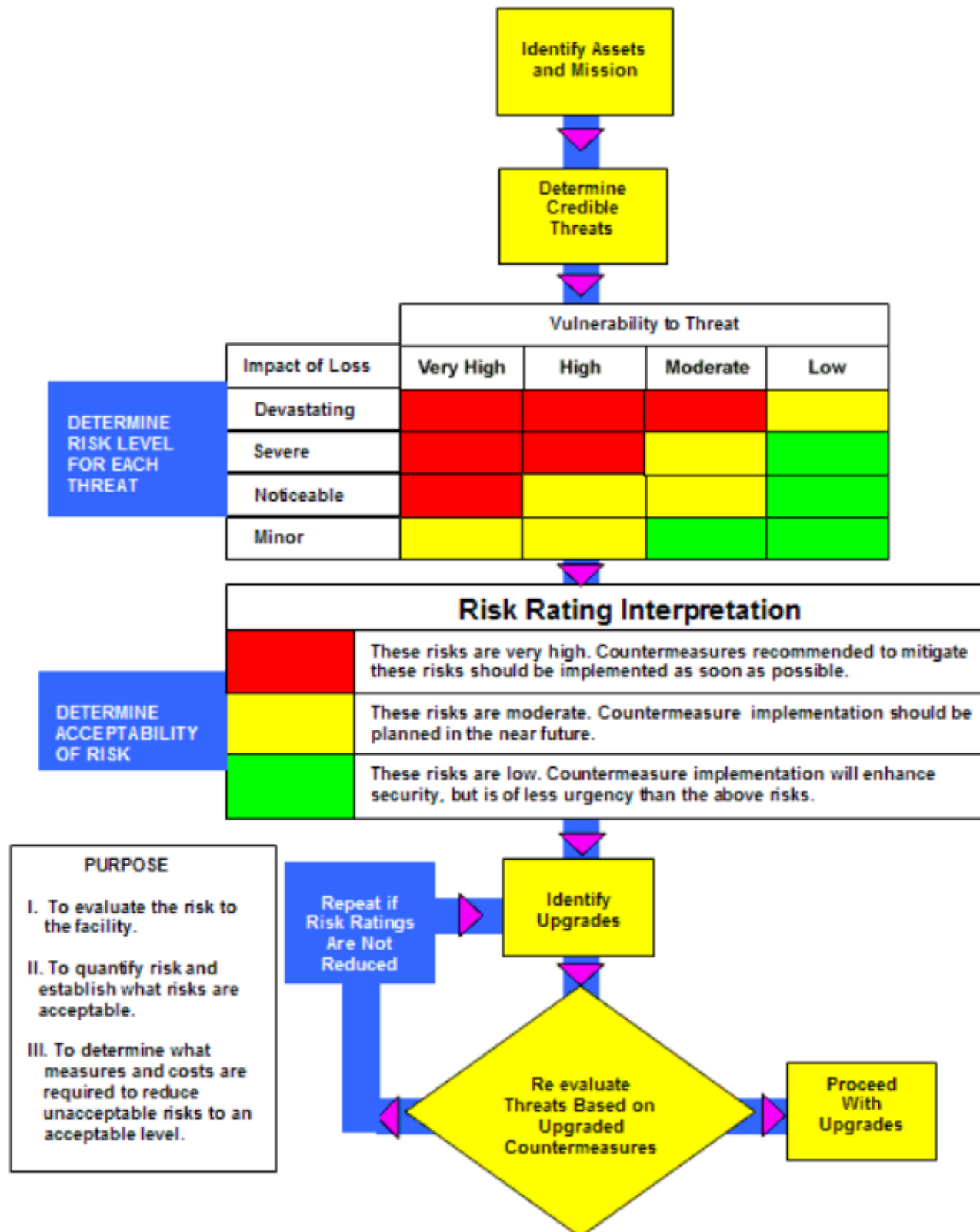
Identify Potential Threats

- **Natural** - tornadoes, hurricanes, floods, fire, or earthquakes
- **Criminal** – Local Crime Rates, Facility Assets
- **Terrorist** - The attractiveness of the facility as a target is a primary consideration
- **Accidental**

Determine Impact of Loss

- **Devastating:** The facility is damaged/contaminated beyond habitable use.
- **Severe:** The facility is partially damaged/contaminated
- **Noticeable:** The facility is temporarily closed or unable to operate
- **Minor:** no significant impact on operations and there is no loss of major assets.

Security and Vulnerability Assessments



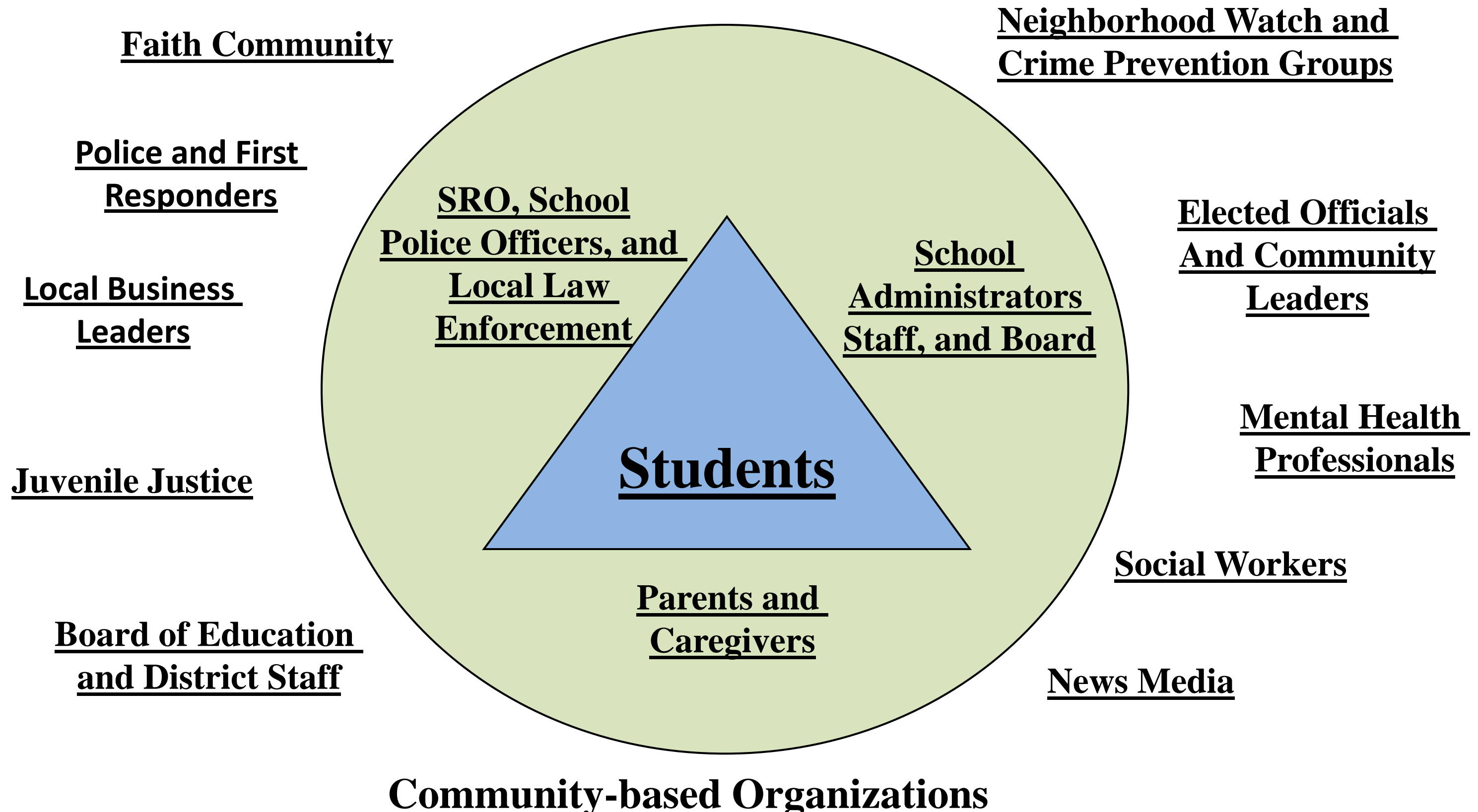
- **Assessment of Risk – What threats and vulnerabilities are most applicable to your facility?**
- **Prioritization of Risk – What risks represent the greatest vulnerability and can be reduced with countermeasures?**
- **Risk Analysis – What risks cannot be realistically reduced or what risks are too remote to call for significant countermeasures?**
- **Risk Reduction Strategies – What is the cost and benefit of each risk reduction strategy?**

Security and Vulnerability Assessments

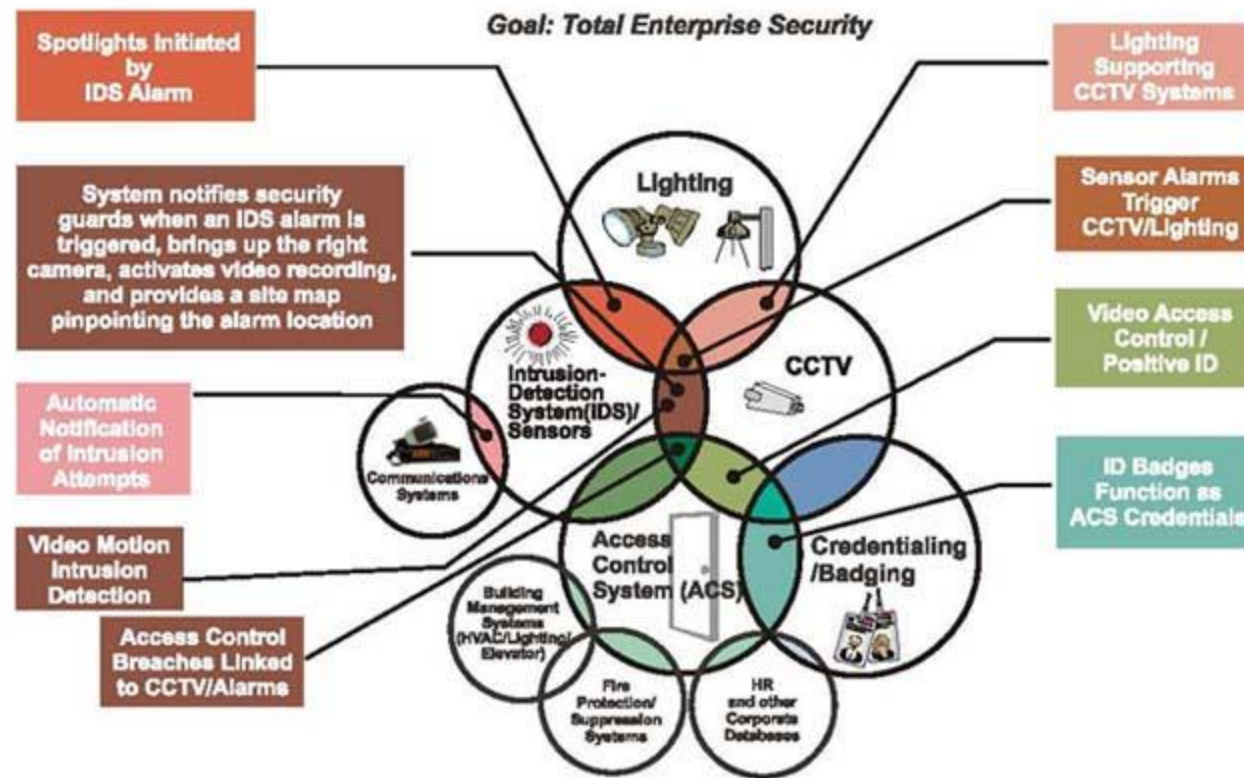


- **Security & Vulnerability Assessments can utilized at Multiple Levels**
 - District Wide Feasibility Studies
 - 5-10 Year Maintenance Plans
 - Construction Projects
 - Renovation & Additions
 - New Construction
- **RESTRICTED USE**
 - Security & Vulnerability Plans should be stand alone documents.
 - Due to the secure and sensitive information contained in the assessment they are protected under the Homeland Security Act of 2002 and are not for public disclosure under Pennsylvania's Right to Know Act.
- It is important to remember assessments are one tool in making our schools safer, building improvements alone will not stop crime.

Who Should Be Involved?



Safe Schools Planning



- Establish a team.
 - Who Performs Security and Vulnerability Assessments?
 - Police
 - Architects
 - Planners
 - Security Experts
 - Engineers
 - Center for Safe Schools
 - CPTED Professionals
- Security vs. All Hazards Reporting
- Assess needs.
- Prioritize needs.
- Develop and implement a plan.



Needs Assessment

- **Collect existing indicator data.**
- **Survey parents, staff, and students about their safety concerns.**
- **Assess climate, security, and design.**
- **Conduct an inventory of assets.**



Table 1. Matrix identifying levels of risk

Impact of Loss	Vulnerability to Threat			
	Very High	High	Moderate	Low
Devastating				
Severe				
Noticeable				
Minor				

- What’s important?
- What’s feasible?

The ratings in the matrix can be interpreted using the explanation shown in Table 2.

Table 2. Interpretation of the risk ratings

	These risks are high. Countermeasures recommended to mitigate these risks should be implemented as soon as possible.
	These risks are moderate. Countermeasure implementation should be planned in the near future.
	These risks are low. Countermeasure implementation will enhance security, but is of less urgency than the above risks.

Top 15 Items recommended by Administration
Current September 22, 2013

Page 36	CCTV camera replacements inc. installations, Phase 1	20,000
Page 18	Finalize the physical operation of panic buttons	15,000
Page 20,24,32	Institute Staff Development & Training Program, annual cost, 300 employees	1,600
Page 25	Institute Material Safety Data Sheet Program, annual cost	4,860
	Complete Emergency Plan review and update Flip Chart	0
Page 11,14	Brush clearing/Tree trimming around District buildings & property lines	14,000
Page 15	Abate IFEC underground fuel storage tank	10,000
	Access control:	
Page 18	IFEC to Weight Room	8,000
	District Office to IFEC	7,500
	Rice kitchen entrance	4,500
Page 37	Stadium facility security	15,000
Page 9	District directional signage & rules signage	5,000
Page 11	Roadway access gates	4,500
Page 8	Building 'Go Bag' standardization, vests, contents	1,500
Page 13,35	Classroom door/window numbering	4,000
Page 37	Maintenance building access control & CCTV system	18,000
All	Low cost items < \$1,000 each	10,000
Estimated Total		143,460

Develop a Plan

- Set measurable objectives that include
 - Time frame
 - Desired change.
- Select effective programs and strategies.
- Break the plan down step-by-step.
- Ability to incorporate objectives into annual maintenance budget or future construction projects.



Factors Affecting School Security

Factors Affecting Safety

- School security
 - Hardware, technology, protocols, and policies
- School design
 - Access control, natural surveillance, and territorial reinforcement
- School climate
 - Values, norms, and attitudes



School Climate Issues



- Bullying, intimidation, and isolation
- Harassment and prejudice
- Social cliques
- Theft and graffiti
- Lack of connectedness
- Disrespect between teachers/staff and students
- Lack of student reporting of crime and safety issues





Safe Schools

- Positive school climate and atmosphere
- Clear and high academic and disciplinary expectations of students
- Strong student attachment to the school
- High levels of both student participation and parent involvement
- Values and practices that make everyone feel included; appreciation of diversity



Safe Schools

- Building and grounds are well maintained.
- Students feel safe reporting crime and safety problems to staff.
- Disciplinary and safety problems are quickly and appropriately addressed.
- Access is controlled and visitors are monitored.
- All staff actively supervise students both inside and outside the classroom.
- All areas are safe by design or by staff supervision.

Crime Prevention through Environmental Design (CPTED)



What is CPTED?

- The proper design and effective use of the built environment can lead to the reduction in the incidence and fear of crime and thereby improve the quality of life. In other words, if a site is laid out well, the likelihood of it being targeted for a crime may be reduced



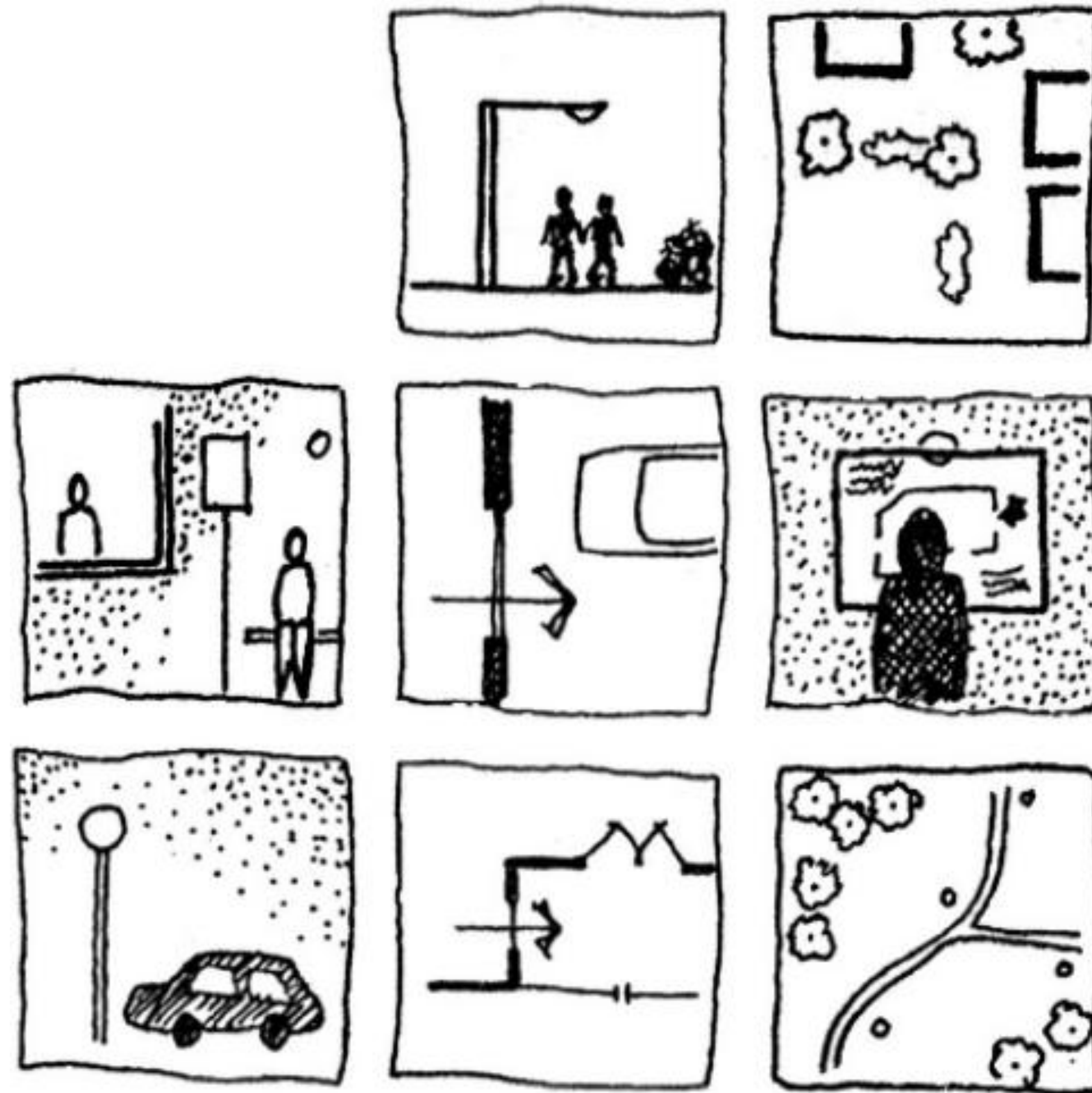
What is CPTED

- Providing Security & Safety while at the same time creating a nurturing, sustainable and inviting environments.



Okay, maybe we went a bit to far!!

CPTED Strategies



- Natural Surveillance
- Territorial Reinforcement
- Natural Access Control
- Lighting
- Maintenance

Strategies – Natural Surveillance

- Design the space to allow visibility by legitimate users and keep possible intruders under observation
- Make the offender's behavior more easily noticeable



Strategies – Territorial Reinforcement

- Territorial reinforcement employs such design elements as sidewalks, landscaping, and porches to help distinguish between public and private areas and helps users exhibit signs of “ownership” that send “hands off” messages to would-be offenders
- People take more interest in something they own or when they feel intrinsically involved



Natural Access Control

- Natural access control employs elements like doors, shrubs, fences, and gates to deny admission to a crime target and to create a perception among offenders that there is a risk in selecting the target.
- The primary thrust of an access control strategy is to deny access to a crime target



Natural Access Control



- Physical and mechanical means of access control—locks, bars, and alarms can supplement natural access control measures if needed
- For example, a fence around a neighborhood playground protects children from wandering off and inhibits entry of potential offenders



Maintenance



- Maintenance, including cleaning, repairing and landscaping, needs to be performed routinely to encourage use of the space for the intended purpose and discourage abnormal and criminal use.
- Maintenance sends a clean signal that someone cares about the space and is likely to defend it against intruders or vandals



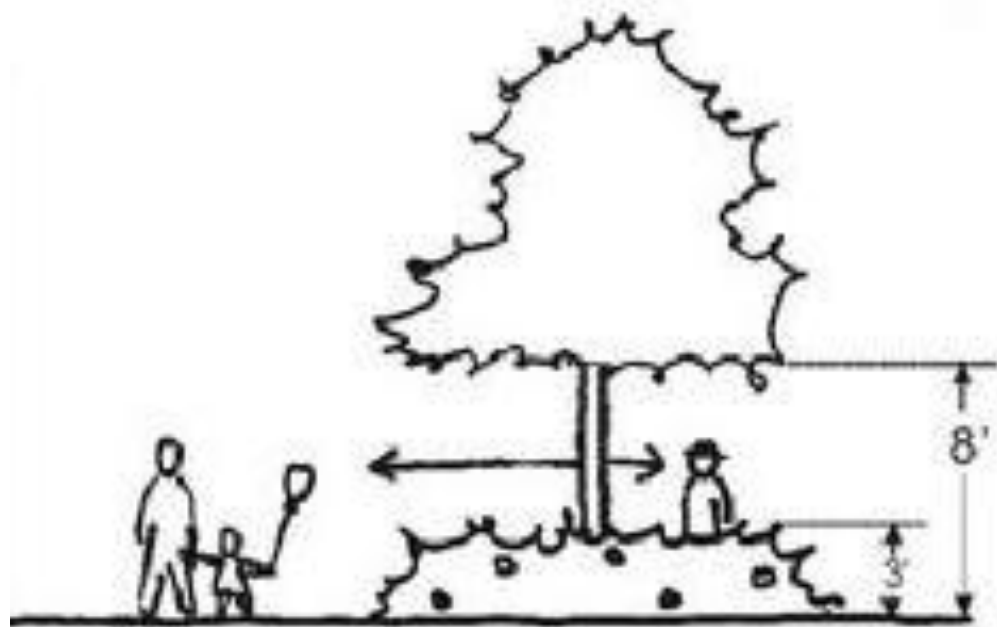
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Natural Surveillance



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Lighting



- Lighting is an important element in any site design. Whether a single house or a shopping mall, appropriate lighting techniques should be used
- Challenges of Balancing Safety with Energy Efficiency
- Pedestrian and Vehicular Lighting
- Metal Halide/ LED Lighting
 - Avoid Low Pressure Sodium, Mercury Vapor
- Provide Cut off Fixtures for Glare Control
- Good lighting will help people to feel more comfortable with their surroundings
- It should provide clear paths for movement and highlight entryways without creating harsh effects or shadowy hiding places

Lighting

- **3D's of Security Lighting**
 - Deter Discourage and Prevent
 - Disable
 - Physical
 - Psychological
 - Detect Eliminate Concealment
- Challenges of Balancing Safety with Energy Efficiency
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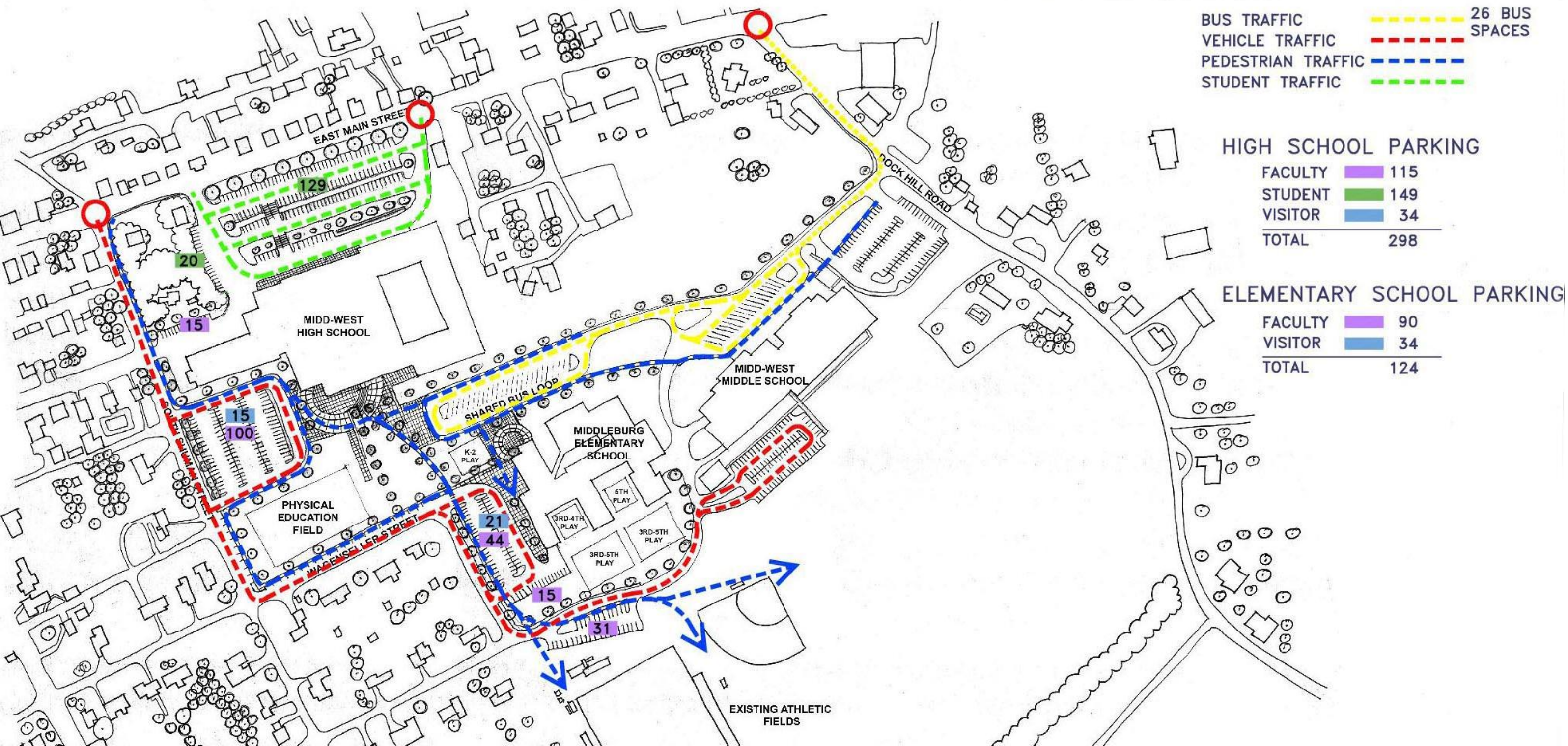


School Security - Examples

Site Evaluation & Concerns

- **Overlap of Pedestrian, Vehicular and Bus traffic**
- **Poor Site Lines for oncoming traffic**
- **Modular Classroom with no security from Primary Buildings**
- **Hidden Open Courtyards**
- **No physical separation between Parking and Building.**
- **Limited Building Lighting.**
- **Rear of Building had limited Windows for Natural Surveillance.**

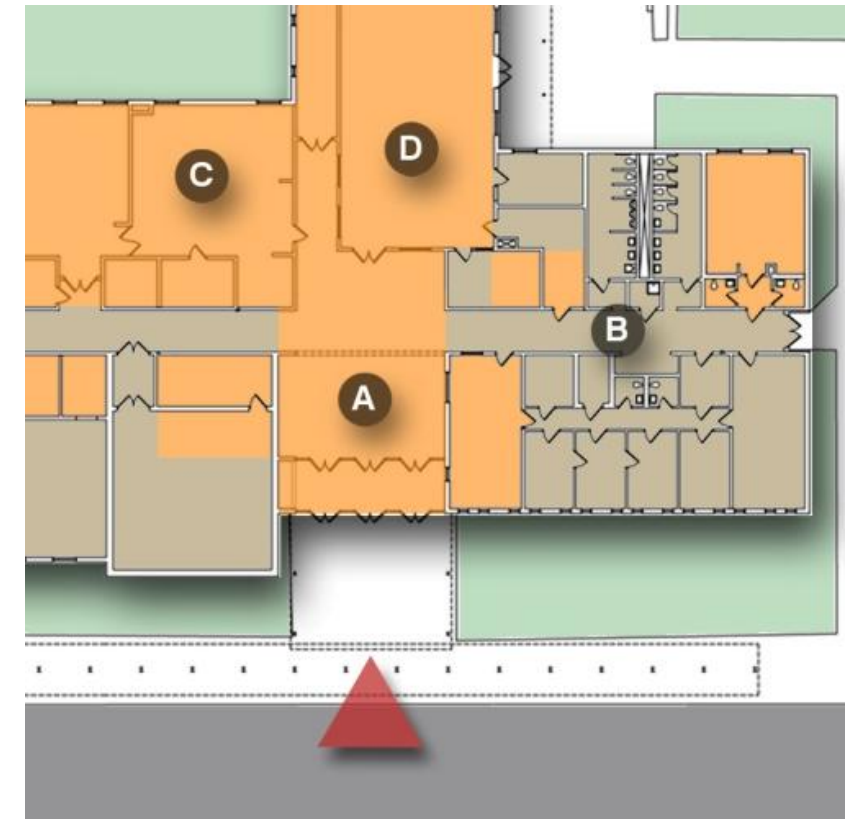
Evaluation of Traffic Patterns



Site Evaluation & Concerns

- **Clear Separation between Bus, Faculty, visitor, student and pedestrian traffic.**
- **No Blind Courtyards readily accessible by the public.**
- **Territorial Reinforcement**
- **Zoned Activity**
- **Lighting Control**
- **Selective Landscaping to maintain visual control of campus.**

- Lack of Staged Access Control



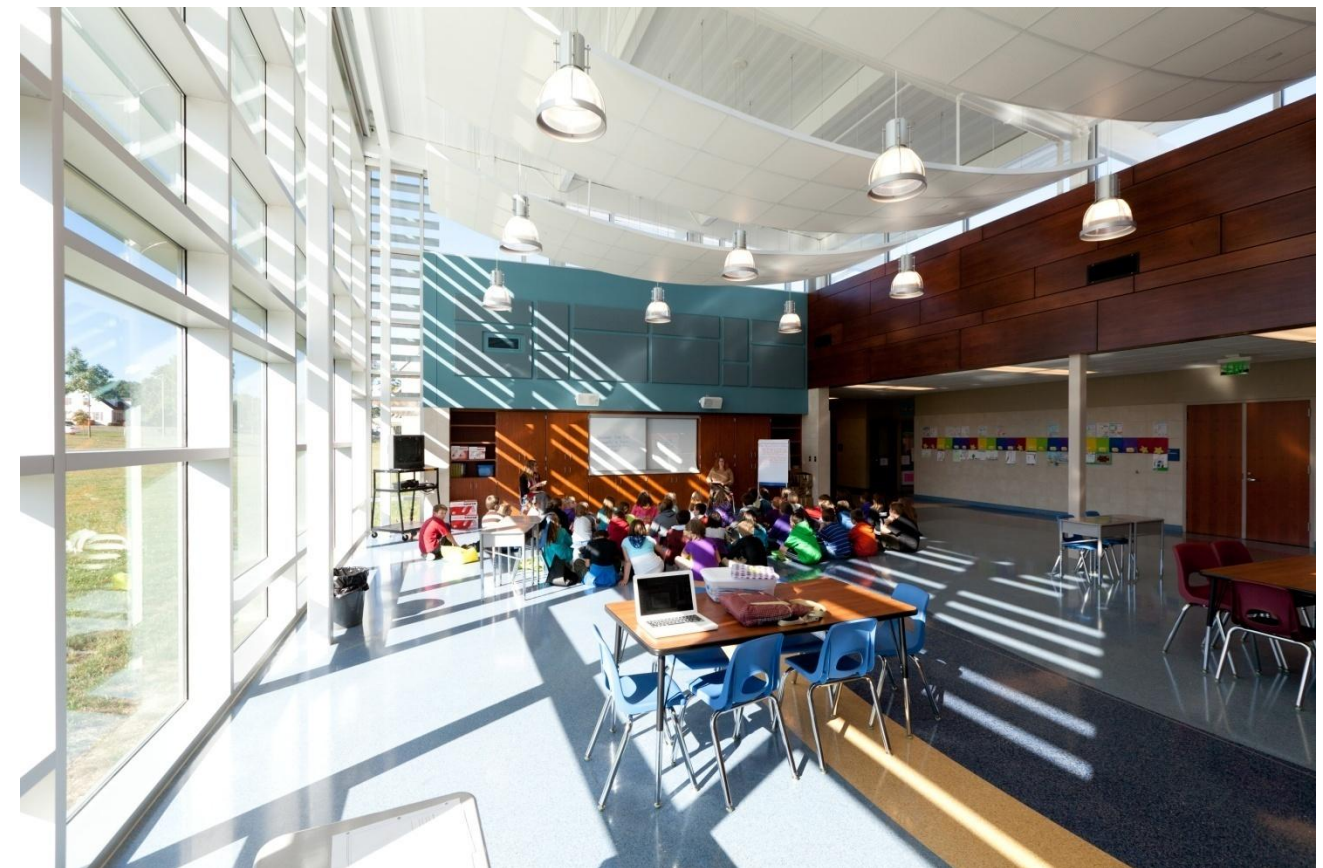
• Staged Access Control

- Security Vestibules
- Controlled Access to Educational Zones of Building
- Ability to Lock Down for a Security Event or Evening Community Use
- Controlled Entrances faced upon FOB/ Swipe System
- Critical that Classroom Door is not the last line of Defense



Staged Access Control

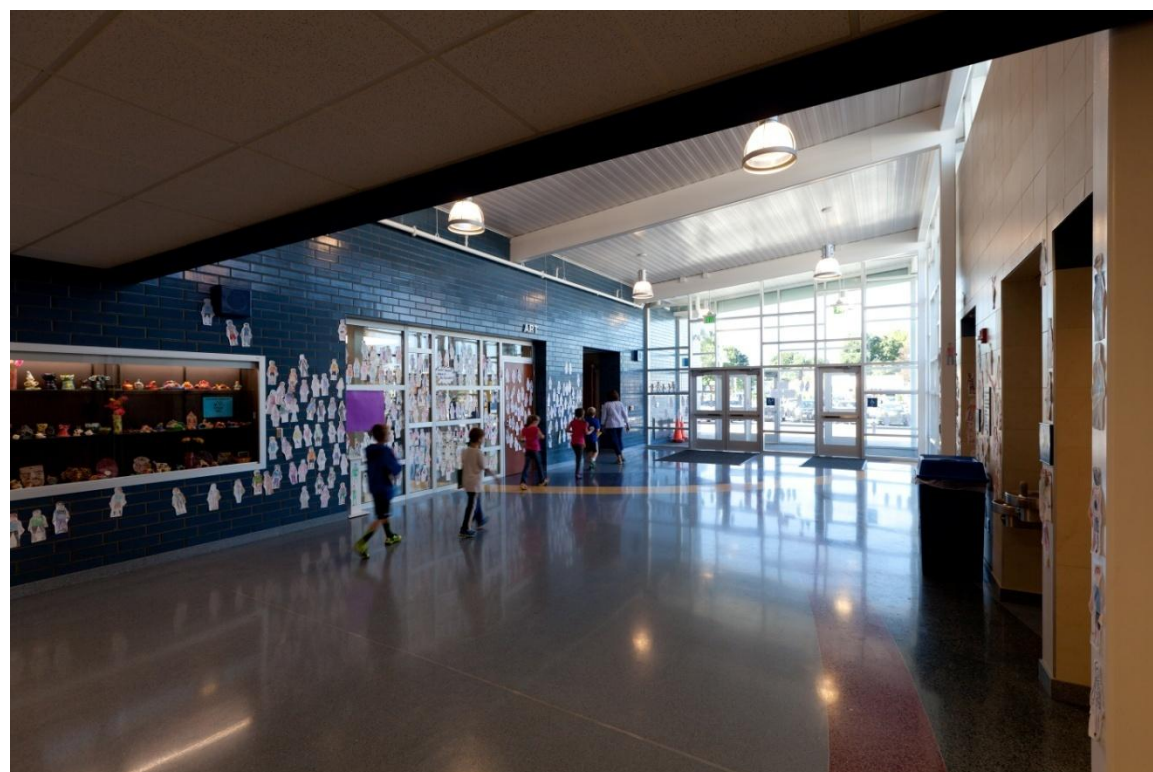
- Allows opportunity of open and inviting schools





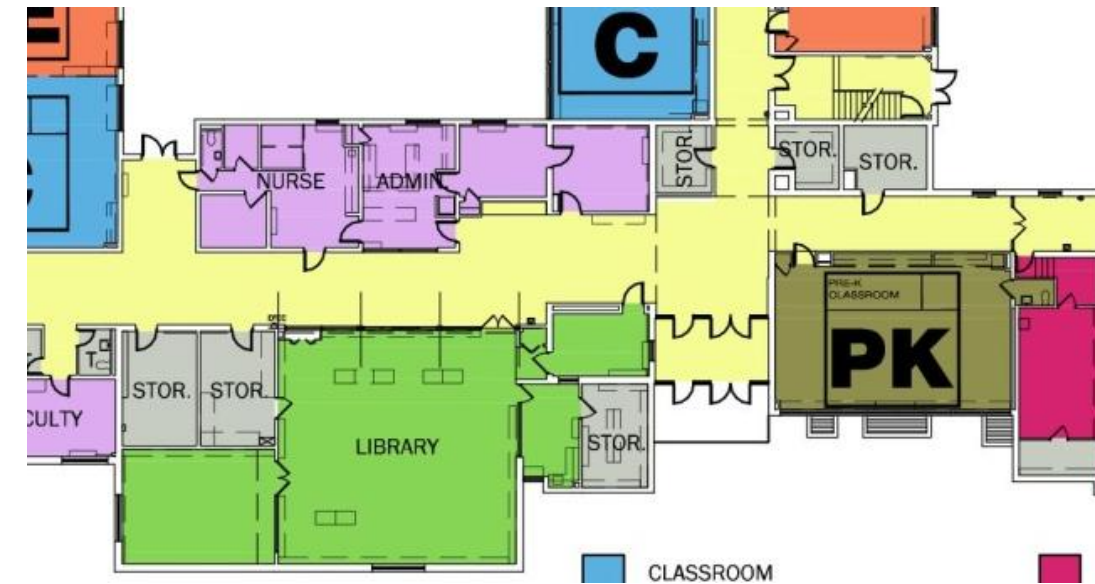
Strategies for Safe School Design

- **Natural Surveillance**
 - Staff and Students
 - Police Intervention
- **Secondary means of egress from open areas**
- **Security Drills**
 - Where do students go in an event.
 - Exterior Blinds
 - Non visible secure rooms
 - Are drawing files coordinated with first responders
- **Utilization of Limited Amounts of Hardening**
 - In Proximity to Entrances





Location of Primary Entrance





Main Entrance

Unsecured Entry Point

Site and Building Assessment

- **Exterior Building Concerns**
 - Undefined Main Entrance
 - Unsecured Building Entry Points
 - Limited Building Lighting
 - Separation of Parking and Student Play Area
- **Interior Building Concerns**



Defined Entrance

- Traffic Separation (Visitor, Staff, Pedestrian)
- Natural Surveillance of Site at Multiple Levels
- Appropriate selection Landscaping



Summary

“Safety is something between your ears, not something you hold in your hands”

John Cooper

In today’s post Columbine and 9/11 community we are challenged by safety and security concerns daily. A first reaction is sometimes to become interverted and isolationist hiding behind walls. The challenge should be to blend best practices of safety and security in a manner that become natural elements of open 21st century education in thoughtful well organized plans for the future of our children.



Additional Information

Thank you for attending our presentation, for more information please visit our website at:

www.cra-architects.com.

A copy of the presentation will be made available at this link: www.cra-architects.com/psbasecurity

For more information please email us at:

marketing@cra-architects.com.