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BUILDING DESIGN + CONSTRUCTION

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Inspiring the Building Team



Special Three-Part Report

CAN DESIGN PREVENT ANOTHER SANDY HOOK?

 **SGC HORIZON**
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What the states should do to prevent MORE SCHOOL SHOOTINGS

To tell the truth, I didn't want to write about the terrible events of December 14, 2012, when 20 children and six adults were gunned down at Sandy Hook Elementary School in Newtown, Conn. I figured other media would provide ample coverage, and anything we did would look cheap or inappropriate.



Two things turned me around. The first was hearing from AEC professionals and manufacturers of door hardware, blastproof glass, and other security products, who said they couldn't keep up with the phone calls from school officials across the country, all of them desperate for a quick fix so that "another Sandy Hook" would never happen on their watch. Irene Nigaglioni, a Partner at PBK Architects, told me that one school official even asked her about bulletproof furniture.

The thing that really got me, though, was that the shootings just kept going on and on. By the first anniversary of the Sandy Hook incident, more than 20 school shootings had taken place in the U.S., including one in Sparks, Nev., where a teacher was killed, and another just this past December 13, in Centennial, Colo., barely 10 miles from the infamous Columbine High School.

Meanwhile, in Newtown, 88% of the 5,062 voters overwhelmingly approved a referendum to tear down the mid-1950s elementary school and build a new one on the same site, with funding coming from a \$50 million grant from the state. Svigals + Partners won the design competition, with Consigli Construction as project manager.

When the vote was reported on Yahoo (<http://yhoo.it/JZ9R5l>), more than 2,000 people responded, many of them angry at what they saw as the waste of a good building, others outraged by the opulence of the grant.

"50 million dollars?" wrote one. "That school must have solid-gold toilets, valet parking, limousine service for every child, five-star French chefs, and platinum silverware for the kids to eat with!"

Meanwhile, Governor Dannel P. Malloy's Sandy

Hook Advisory Commission issued an interim report last March (the final report is expected later this year), based in part on input from informational meetings on infrastructure design, school safety and security, and gun violence.

The Commission made only two specific recommendations: 1) that all K-12 classrooms be equipped with doors that could be locked from the inside by the teacher, and 2) that all exterior doors be equipped with hardware capable of implementing a full perimeter lockdown.

In addition, the Commission recommended that school districts "consider" developing an All-Hazards Threat and Risk Assessment Security Recommendations (TRASR) tool on a site-specific basis, to include "rational and credible protective design of building and site components" based on Crime Prevention Through Environmental Design (CPTED) strategies.

The report noted that "no standard exists for the baseline of safe school design or a process to determine appropriate safe school design elements." In fact, most states have no standards or regulations on security in the design of schools.

We think it's time for the states, working through such groups as the National Conference of State Legislatures and the National Governors Association, to put "security" into their requirements for school construction. As we note in our Special Report, however, security design and technology can only go so far. Training and preparedness at the local level are equally important.

Robert Cassidy, Editorial Director

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can design prevent another Sandy Hook?

NO. BUT IT COULD SAVE LIVES.
OUR EXPERTS SHOW YOU HOW.

BY ROBERT CASSIDY, EDITORIAL DIRECTOR

What can Building Teams do to prevent another tragedy like the one that befell Newtown, Conn., on December 14, 2012, when 20 first-graders and six adults were killed at Sandy Hook Elementary School? Some would say nothing—that it's impossible to stop an armed madman who is hell-bent on killing and willing to die.

“It's a raw fact that if someone wants to hurt kids in a school, the likelihood is that they'll have success,” says Pat Lamb, Director of Security & Operations, Irving (Texas) Independent School District, who oversees security for 35,000 students and 4,500 staff in 38 buildings. “You have to have the processes, infrastructure, and people in place to thwart the aggressor and mitigate the damage.”

TOM RYBARCZYK

With more than 20 shooting incidents in schools since Sandy Hook, security is a high priority for school administrators and boards. “They don’t want to be the one that says it could never happen here,” says Susan Smith, AIA, LEED AP, Vice President, Corgan Associates.

Based on consultations with 17 experts in school security, the editors of *Building Design+Construction* offer this Special Report to provide you with reasonable design considerations you can bring to your K-12 clients to prevent, or at least mitigate, a Sandy Hook on their turf.

GET EVERYONE INVOLVED IN THE PLANNING PROCESS

Making schools safe starts with a process of rigorous planning by a broad base of stakeholders—at the very least, school administrators, AEC professionals, security consultants, first responders, parents, and community leaders. It calls for a detailed

assessment by the school district of the realities of the threats to children and staff, followed by clear goal-setting and budgeting. Sound painful? It is. But helping your K-12 clients through such a process can afford them the highest level of security possible for the available public funds—not the ill-conceived and often wasteful “solutions” that follow a headline-grabbing incident like Sandy Hook.

“The rule is, Do everything you can, knowing you can’t do everything,” says Ronald Stephens, PhD, Executive Director, National School Safety Center. As our exclusive survey notes (see pages 32-35), school districts are loath to devote limited capital resources to security improvements. It’s your job to give them the most protection you can for the available dollars.

In the following pages, we offer a plan of action, based on input from numerous experts, to guide you in making new and existing schools safer, particularly in the case of an armed intruder. Part I focuses largely on planning and building design for school security. Part II looks at technological solutions to this threat. Part III presents the results of our exclusive survey of *BD+C* subscribers.

Before we go on, however, several points need to be emphasized:

1. Early planning and collaboration with all stakeholders in the school district is the key to success. Skip this step and you may as well pack your iPad and go back to the office.
2. Thoughtful design of schools through the employment of “the three Ds” of security—deter, detect, delay—could save lives when seconds count.
3. Technology can help, but technology alone cannot make schools 100% safe. Training and preparedness, plus good design, are also required.
4. School boards’ chief priority is educating children, but they must also take into consideration that school buildings are community resources and must be open to the public at certain times. School officials and AEC professionals are strongly united

in the belief that schools must not be turned into walled fortresses in the name of security.

START WITH THE EXTERIOR THREAT ASSESSMENT

What are the likely threats to security in the schools you serve? “The chances of a Newtown-type incident are low, but something is going to happen at your school,” says Kenneth M. Glantz, Executive Director, National Domestic Preparedness Coalition. It could be a ninth-grader who’s been bullied and now keeps a weapon in his locker. Or an angry parent who’s in a custody battle. Or a suspicious backpack hidden in a stairwell.

Scenarios like these are hardly far-fetched. “Over the years, we’ve had a lot of stuff with students, parents upset with teachers, custody issues,” says Larry D. Johnson, Assistant Superintendent and Executive Director for Public Safety/School Security, Grand Rapids (Mich.) Public Schools. “We’ve stopped a lot of incidents.”

You can help initiate this assessment for your school district client by involving local police, other first responders, school resource officers (“SROs”), and facility staff in the assessment. You should advocate for the school board to hire a professional consultant with experience in school security. (See box, page 25.) Our exclusive survey shows that about 10% of AEC firms have security expertise on staff, and that many more firms use security consultants.

Then make a site tour with the security team and school administrators. “We start as far away from the school as possible—in the neighborhood, on the path to school, at the entry into the building, and right into the classroom,” says Ed Schmidt, AIA, NOMA, CEFP, Principal/Executive Director, Fanning Howey.

Here’s a list of things to check *outside* the building:

- Is the property securely fenced? Can the fence be climbed easily?
- In old buildings, are there fire escapes?



The security sidelite unit “hardens the target” by providing an operable hollow metal panel that can be closed over the glass portion of the sidelite in an emergency. It also serves as a visual cue that the area has extra protection.

- Is everyone who approaches the school directed to controlled entry points?
- Are trash containers (good places to stash weapons or explosives) locked?
- Are electrical vaults fenced and locked in the on position, so that an intruder can't turn off the power to security cameras and notification systems?
- Are propane tanks set away from the building, fenced off, and padlocked?
- Are there cobwebs on the UPS generator? Then it hasn't been tested recently or properly maintained.
- Is the surrounding terrain hilly, thereby affording a shooter a line of fire into the building?

Landscaping should be carefully scoped

out. Well-maintained grounds send a message that people care about the school, which can act as a deterrent, according to security experts. But greenery can also raise security concerns. Check to see if bushes are trimmed to three feet high so that an intruder can't lurk behind them. Tree branches should be cut to a height of 10 feet to make it difficult for an intruder to get up into a tree and hide.

Adds Alan Brockbank, President, B-Secure Consulting, "Make sure trees near the school building don't provide access to the roof or block the security cameras

'Every dollar we spend on security is a dollar that's not going into education. We have to be sure we're not allowing security concerns to overwhelm what's going on in the classroom.'

—Larry Johnson, Grand Rapids (Mich.) Public Schools

or lighting systems."

Deliveries are another security concern. Watch how, when, and where deliveries are made, particularly food trucks servicing the cafeteria. "Loading docks are a problem, because the driver props open the back door to deliver his load, but nobody checks when that truck leaves, so the door stays

APPLYING CPTED PRINCIPLES to schools

Crime prevention through environmental design, or CPTED, owes its origins to the 1971 book of that title by criminologist C. Ray Jeffery. A year later came Oscar Newman's *Defensible Space: Crime Prevention Through Urban Design*.

CPTED has since been adapted to meet the security needs of schools. The National Institute of Crime Prevention offers 24- and 40-hour courses on CPTED for Schools (www.cptedtraining.net), with such segments as "CPTED Strategies," "Lighting for Safety," and "CPTED, Schools, and Terrorism."

CPTED rests on four basic tenets: 1) access control, 2) surveillance (both "natural" and "formal"), 3) territoriality, and 4) hardening the target.

Access control refers to the use of a single, clearly identifiable entry point to which visitors to a school are diverted, in a kind of funnel effect. Visitors should be stopped at a secure door, surveilled by video camera, asked to identify themselves, and buzzed in to a secure vestibule, where further identification and badging should take place.

Formal surveillance involves the use of video cameras and other electronic equipment to monitor entrances, parking lots, interior hallways, courtyards, and play areas for suspicious activity.

Natural surveillance uses "eyes on the street" to detect unusual activity that might call for a security response; for example, an exit door propped open with a stick. "Everyone on staff, even housekeeping, has to be vigilant," says Heery International's David Waggoner.

Territoriality refers to the delineation of space to allow for greater control by legitimate users, chiefly by providing clearly marked (and securable) zones of separation between classroom areas and spaces open to the community, such as meeting rooms. Security signage ("All Visitors Must Report to the Front Office"), proper building maintenance, and orderly landscaping contribute to territoriality.

Hardening the target works by making it harder for an intruder to take action. It can buy precious seconds. Commercial-grade doors, locks on the inside of classroom doors, lockable



TOM RYBARCZYK

CPTED puts "eyes on the street." Here, a teacher who happens to be glancing out the window notices a man who has parked his vehicle illegally and is carrying a bag that could contain a weapon. Her next step: notify the office right away.

sidelites in classroom entries, a bulletproof door between the security vestibule and the hallway into the main building—these are examples of ways that schools can be "hardened" without turning them into prisons or fortresses.

special report – part one

DESIGNING FOR SCHOOL SECURITY

open for hours,” says Brockbank. If possible, fuel and other dangerous cargoes should be delivered when class is not in session, says Glantz.

A rule of thumb on deliveries: “Make sure you know who’s coming, and make them check in at the office first,” says Glantz.

Vehicle flow and parking can also pose problems. Bus drop-offs should be separated from car drop-offs, not only for safety reasons but also to alert staff to any activity that looks out of place. Staff, visitor, and student parking should be assigned distinct areas. Visitor parking should be set back from the front of the building and clearly marked with signage to direct people to the front entrance: “You don’t want to make visitors walk around the whole building to find the front door,” says Irene Nigaglioni, AIA, LEED AP BD+C, CEFP, Partner, PBK Architects.

Visitors should be visible from the front office, so that staff can take appropriate action if anything looks suspicious. “You want to be able to see anyone who has a shift in behavior, such as parking in a delivery area,” says Rebecca Baibak, AIA, LEED AP, Principal, Integrus Architecture. (The shooter at Sandy Hook Elementary parked his car next to a No Parking zone.) Parking areas should have signs stating “All vehicles subject to search.”

Once the security team has made the rounds of the exterior, it’s time to enter the building.

WHAT TO LOOK FOR IN THE INTERIOR ASSESSMENT

Here’s a list of things to check *inside* the building:

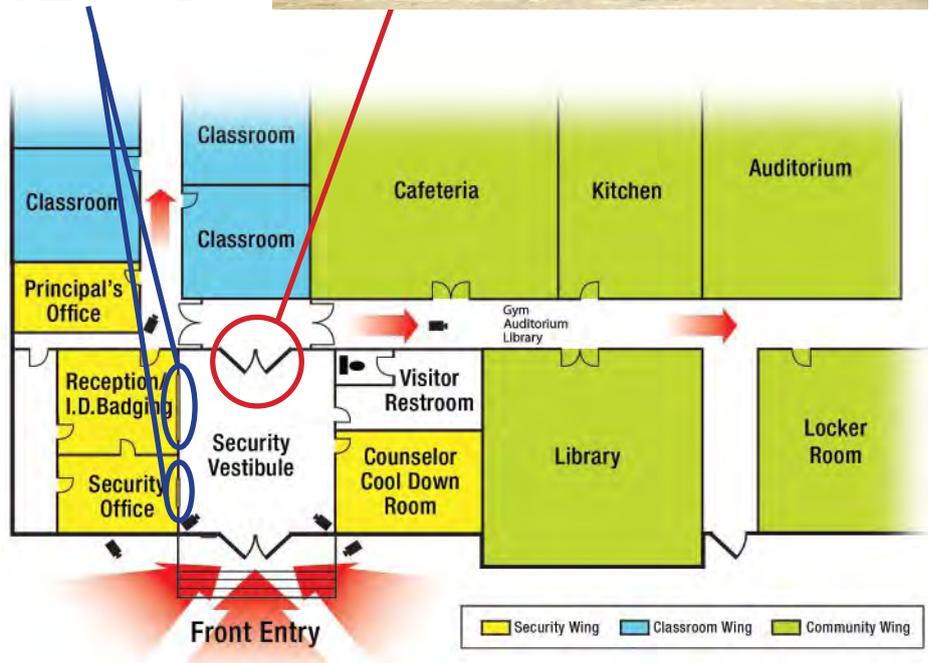
- Is there any front-door security to speak of? Did anyone greet you at the door?
- How hard is it to get past the reception area and into the classroom corridors?
- Are classrooms locked from the inside?
- Are classroom areas separated from community spaces?
- Are all security cameras working? Do they have the optimal line of sight?
- Is the roof hatch unlocked?

Floor plan shows “funneled” visitor flow from the exterior through a visually screened entryway secured by commercial-grade doors into a security vestibule, where further identification and badging can be conducted. At right, the path from the security vestibule to classrooms at Blairstown (N.J.) Elementary School is guarded by doors rated to UL Level 8 ballistic protection.



COURTESY UNITED STATES BULLET PROOFING, INC.

BULLETPROOF GLASS



TOM RYBARCZYK

- How good are sight lines down corridors?
- Any out-of-the-way restrooms or storage areas where someone could hide?
- Are any exterior doors propped open? Are these doors fitted with alarms?
- Is anything—or anyone—hidden in the stairwells?
- Do all visitors have ID badges? Are

- they allowed to stroll unaccompanied through the halls?
- What kind of keying system is in place? Keyless entry via swipe cards? Or actual keys? If the latter, are all keys accounted for? Manual keys should not be able to be duplicated or used without authorization.

Lighting must be checked both during the day and at night. “I usually find dozens of lights out, and when I ask the facilities people when they were last checked, I get ‘Oh, a couple of years ago,’” says Brockbank.

A word of advice: Don’t let school officials push you into performing the assessment on a weekend or over the summer.

how to hire a SCHOOL SECURITY CONSULTANT

We asked Alan Brockbank, CPP, CSC, President, B Secure Consulting, what you and your K-12 clients should look for in a security consultant. Here’s his advice:

1. **Verify that the consultant has the right credentials.** “Many so-called ‘security experts’ don’t have the proper experience and credentials,” he says. Such designations include the Certified Protection Professional (CPP) or the Physical Security Professional (PSP), both administered by the American Society for Industrial Security (www.asis.org), and the Certified Security Consultant (CSC) designation from the International Association of Professional Security Consultants (iapsc.org).
2. **Verify that the person or firm has proven experience** in school security matters and is not just a generalist.
3. **Ask to review samples** of their work product.
4. **Don’t just ask for references—call them** to see if you detect any hesitancy about recommending the consultant.

Why not just use the local police department? Brockbank’s response: “Law enforcement officials are best consulted for incident response planning. Security consultants are typically better at the preventive measures that should be considered to help deter, detect, delay, and deny these incidents.”

“You have to do the threat assessment while school is in session, so you can evaluate the day-to-day security operations,” says Fanning Howey’s Schmidt.

Ultimately, it is the job of the school board—acting, it is hoped, on advice from you—to make the final determination of the security threats.

Threat conditions vary widely, of course. A city school beset by gangs will have a much different agenda from that of a school district in a leafy suburb. A rural school district in the Southwest may have tornado planning at the top of its list, but visitors carrying legally concealed weapons may be a worry as well. High schools are usually bigger and more chaotic than middle or elementary schools. Some districts mix multiple buildings in a large-scale campus, making it more difficult to manage the flow of students and visitors.

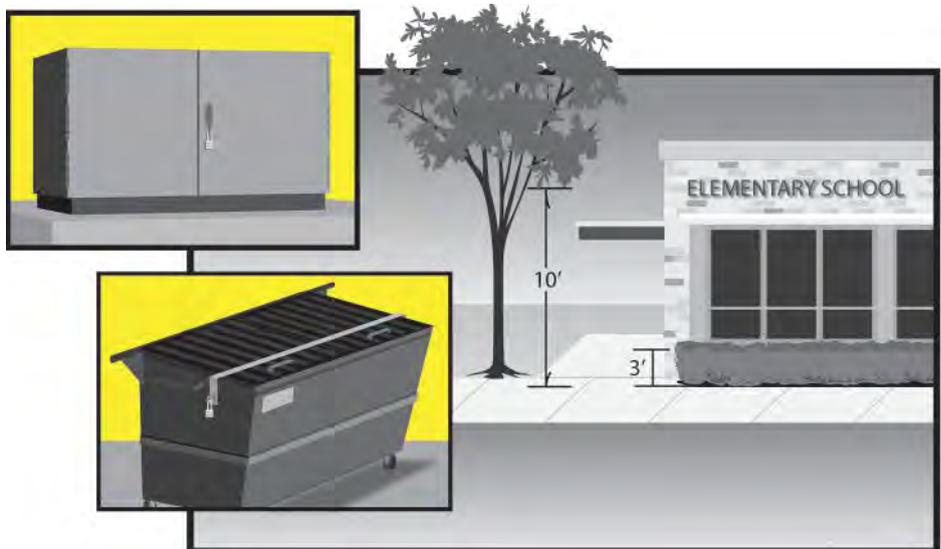
Finally, the threat assessment must also take into account the *resources* that would be available in the event of an incident. How

quickly can police and EMTs get to the school? What level of emergency care is available at the nearest hospital? In a crisis, says PBK’s Nigaglioni, “You may be dealing with a situation where seconds count.”

At this point, the school board must establish priorities for security improvements via the budgeting process. The security budget should have three basic components: 1) *capital improvements* to new and existing buildings, 2) *systems improvements and technology*, and 3) *training* of staff, teachers, and students. All three have to be in place and carefully balanced for the overall plan to be effective. “It’s a mistake to think that the

‘What can you do with existing schools? You want to control access, and make sure the doors are exit only. You can’t get rid of doors, but you can lock them.’

—Irene Nigaglioni, PBK Architects



Exterior conditions that should be checked in the process of conducting a threat analysis for an existing school (clockwise from upper left): Electrical vaults should be locked in the on position and screened; tree branches should be trimmed to 10 feet for visual monitoring and to prevent an intruder from hiding in the tree; bushes should be trimmed to three feet for the same reasons; and trash receptacles should be locked to prevent an intruder from using them to store weapons or explosives.

TOM RYBARCZYK

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DESIGNING FOR SCHOOL SECURITY

building itself will provide the level of safety that everybody's looking for," says David M. Waggoner, AIA, CEFP, LEED AP BD+C, Vice President, Heery International.

A word about training: There is a sense of skepticism among security specialists about the rigor level of training in many school districts. "If you were to poll school districts, they would tell you they have their security plans, but if you talk to the school principals, they'll say, yes, there may be a plan, but the security measures in place are low and so is the amount of practice," says Glantz, a former captain in the Orlando (Fla.) Sheriff's Department.

The 18,000-student Grand Rapids, Mich., system, may be a model of how to do it right. All GRPS administrative staff must attend a full-day School Safety Leadership Academy, plus an eight-hour advanced course. All 40 security officers go through 120 hours of training every year, approved by the National Association of School Security and Law Enforcement Officials (NASSLEO). All architects and engineers who do work for the district must be certified in Crime Prevention Through Environmental Design.

Training and preparedness must be an essential component of any school security program. "Smart superintendents, principals, and school boards recognize that security and preparedness efforts are a strong tool for strengthening school-community trust and confidence in their leadership," says Kenneth S. Trump, MPA, President, National School Safety and Security Services.

GUARD THE FRONT DOOR!

Our experts agree that physical design for schools should be guided by CPTED principles. The single most important element, they concur, is the entry system. Once the bell rings and students are in their classrooms, all late students and visitors—the UPS driver, the mom bringing in her third-grader's forgotten lunchbox—must be "funneled" into a single, secure entryway equipped with a commercial-grade door and

one or more video surveillance cameras. After being identified by office staff, the visitor should be buzzed into a "security vestibule."

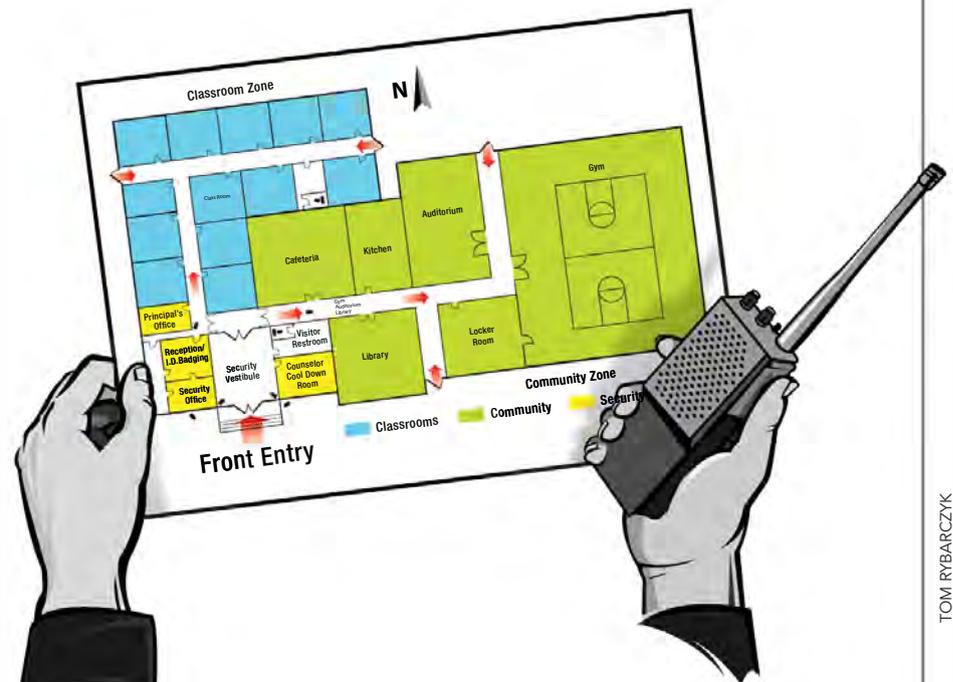
One problem that comes up at this point is the "piggybacker"—the unscreened visitor who "tailgates" in behind legitimate visitors as they're buzzed in. This is usually the fault of poor camera placement, which prevents the staff person doing the surveillance from seeing everyone who's near the door. The solution, according to Trump, is to add a second camera (preferably a

pan-tilt-zoom, or PTZ, camera) to provide a wider view of the entire front door area.

Once inside the vestibule, all visitors should be greeted personally. This creates a "security statement" right up front. "One of the tenets of security is, To be confronted reduces crime," says Glantz. "The greeter at Walmart is there not just to say 'Hi' but because they want you to understand that someone knows you're in the building."

Inside the vestibule, the reception desk is one place where bullet-resistant or even

SHARE FLOOR PLANS with first responders



In most jurisdictions, public schools are required to share their floor plans with their local police and fire departments for emergency planning. "When we complete a school, the first responders ask for the plans and put them into their systems," says Rebecca Baibak, Principal, Integrus Architecture, Seattle. "They're particular about the level of detail they want in their drawings, so that they have a very simple way of analyzing that building."

Security consultant Ken Glantz advises AEC firms to get first responders on site with plans in hand so they can test how well the documents correspond to reality. "We had one school where there had been six additions, so you'd enter in the 600 wing and the next one might be 300—there was no logic," says Glantz. "A good floor plan is critical for first responders to be able to do their jobs."

TOM RYBARCZYK

bulletproof glass and strengthened framing are worth the considerable expense. Receptionists should be equipped with a fast-response lockdown system and a buzzer (also known as a panic button) that directly signals local police. “We’re putting in a lot of those buzzers,” says Nagaglioni. “If the receptionist has a problem, the safest thing is just to buzz. There may not be an issue, but it accelerates the process if there is one.”

Visitors should be asked for their driver’s licenses. There are systems that can do a quick background check to determine if the person is a sex offender or other security risk. Visitors should be given badges (to be worn at all times) and buzzed or escorted through a second heavily secured door leading into the main part of the building. “Every teacher and staff member should be taught to look for that badge,” says Corgan’s Smith. “Anyone without a badge should immediately be escorted back to the front office.”

If your design—whether for new construction or retrofit—meets the above standard, you’re on your way to a much more secure building. But two common situations have to be addressed. The first is the I-need-to-use-the-toilet-real-bad problem. Since schools are public buildings, it’s hard to deny access for such a request. But what if it’s just an excuse to get into the school and cause havoc?

‘One teacher propping open a door with a rock can defeat a million-dollar security system.’

—Jim LaPosta, JCJ Architecture

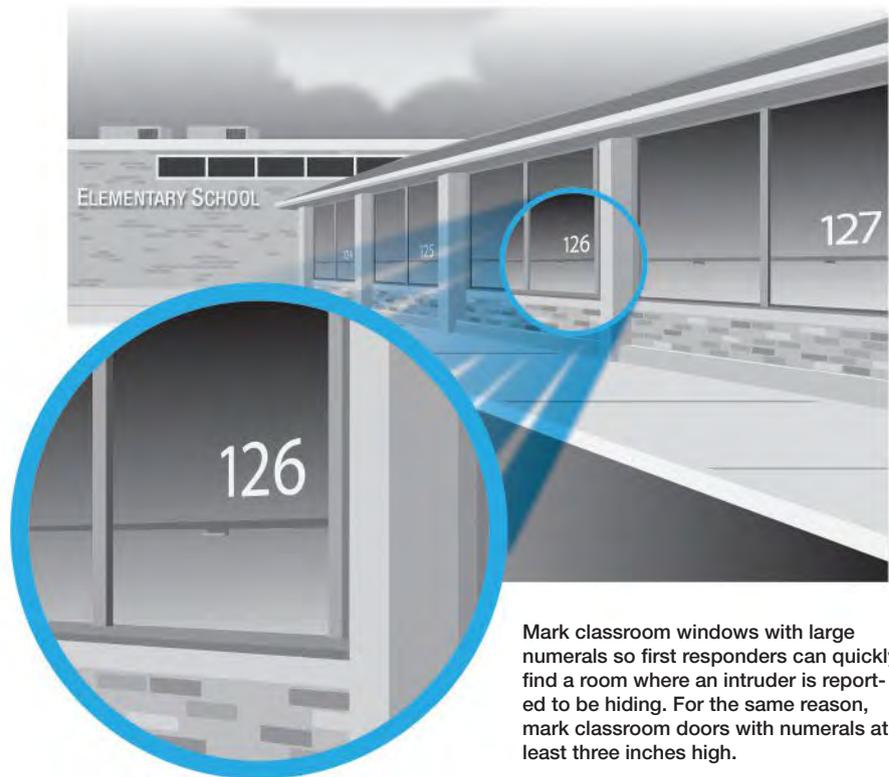
The solution, where feasible, is to have a restroom adjacent to the security vestibule but still short of the secure door to the main building. It’s not the perfect answer, but it’s better than letting visitors use restrooms in student areas.

The other problem is angry parents, especially those involved in custody

disputes. “I get 10 or 12 of those a year,” says Collin County (Texas) Sheriff Deputy George White. “I get the noncustodial dad who says, ‘I’m coming to the school to get my kid,’ and the angry mom who doesn’t want her ex-husband’s girlfriend to pick up the child,” he says. Situations like these can boil up into potentially violent confrontations, says White, SRO for Anna (Texas) ISD.

The design solution is to program in a “counseling room” off the vestibule for use by the SRO to cool down an angry adult, or for the school counselor to hold sessions that could turn nasty. As with the restroom, this space should have restricted access to the main building.

It’s a lot easier to create a security vestibule with new construction than it is to adapt an existing building. In many older school buildings, the main office is located deep in the core of the building, so that visitors have to walk through the hallways to



Mark classroom windows with large numerals so first responders can quickly find a room where an intruder is reported to be hiding. For the same reason, mark classroom doors with numerals at least three inches high.

get screened—hardly an ideal scenario.

The same goes for zoning the school to separate the classroom wings from any spaces where the public might have routine access—meeting rooms used by the community, for example. Once again, it’s easier to create separate zones when you’re working with a blank slate than it is in a retrofit. For older schools, Broadbank recommends separating the spaces with commercial-grade or even blastproof doors equipped with maglocks, so that the doors can be locked down in the event of a security intrusion.

SECURITY AND SUSTAINABILITY: SHALL THE TWAIN EVER MEET?

Just as designers are wary of making schools look like prisons in the name of security, they’re also concerned about security trumping daylighting and views of the outdoors, which are believed to benefit student and teacher performance. “You can’t make every pane of glass bulletproof,” says Heery’s

'We empower everyone, even the kitchen staff, to sound the alarm and call for a lockdown and lockout if something doesn't look right.'

—Pat Lamb, Irving (Texas) ISD

David Waggoner. "You want to do as much as you can within the finite resources." One place where experts agree that bulletproof or ballistic-resistant glass is a must is the reception area in the security vestibule.

As for other measures, laminated film or glass won't stop bullets but could slow down an intruder. Ballistic fabrics can be applied behind drywall. Blast curtains may be effective, but they block the sun when in use. And fire chiefs may be concerned that hardened windows may be difficult to break through in the event of a fire.

This does not mean that designers should give up on using glass in schools. Applying CPTED principles, the argument can be made that glass provides improved lines of sight, so that an intruder can be spotted more quickly. "First responders want to be able to see into the building," says JCJ Architecture's Jim LaPosta. In a post-Sandy Hook world, though, Building Teams will have to plug a security factor into their energy and daylighting models for new and reconstructed schools.

Laposta, who testified as an expert before the Governor's Commission on the Newtown shootings, says the final report is unlikely to go so far as to recommend bulletproof glass in every Connecticut school building window.

"A lot comes down to general building layout, situational awareness—designing a building with good sight lines, so if something looks out of place, you're aware of it as soon as possible," he says. Response time in shooting incidents has been about three to eight minutes, he notes. "If you can buy three or four minutes you can reduce the harm by moving people out of way, locking them down, and creating a secure site." +

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Ron Lander, CPP, CMAS, PSM, CEO
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Principal and Executive Director
Fanning Howey

Susan Smith, AIA, LEED AP, Vice President
Corgan Associates Inc.

Ronald Stephens, PhD, Executive Director
National School Safety Center

Doug Titus, CFM, Business Development
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ASSA ABLOY

Kenneth S. Trump, MPA, President
National School Safety and Security Services

David Waggoner, AIA, CEFP, LEED AP
BD+C, Vice President
Heery International

Collin County Sheriff Deputy George White
Anna (Texas) ISD

ADDITIONAL RESOURCES

Electronic Security Association, "Electronic Security Guidelines for Schools," June 1, 2013, at: www.esaweb.org/resource/resmgr/ESA-Resources/Guidelines_-_School_Security.pdf.

American Clearinghouse on Educational Facilities
<http://www.acefacilities.org/CampusSafety.aspx>

ASIS School Safety & Security Committee
<https://www.asisonline.org/Membership/Member-Center/Councils/schoolsafety/Pages/default.aspx>

Council of Educational Facilities Planners International, "Safe Schools: A Best Practices Guide," Spring 2013, at: <http://media.cefpi.org/SafeSchoolsGuide.pdf>

National Association of School Security and Law Enforcement Officials
nassleo.org

National Institute of Crime Prevention
<http://www.nicp.net/>

North Carolina Division of School Support – School Planning, "Public Schools of North Carolina: Facilities Guidelines," May 2013, at: <http://www.schoolclearinghouse.org/pubs/FacilityGuidelines2013.pdf>, and "Design of Schools to Resist Violent Attack," January 2008, at: <http://www.schoolclearinghouse.org/pubs/DesignSafeSchools.pdf>

Readiness and Emergency Management for Schools Technical Assistance Center
rems.ed.gov

Sandy Hook Advisory Commission Interim Report, March 18, 2013, at: http://www.governor.ct.gov/malloy/lib/malloy/SHAC_Interim_Report_2013.03.18.pdf

16 RECOMMENDATIONS ON security technology TO TAKE TO YOUR K-12 CLIENTS



BY ROBERT CASSIDY, EDITORIAL DIRECTOR

Will a camera stop crime? No, but it can be a deterrent,” says Pat Lamb, School Safety Director, Irving (Texas) Independent School District. Technology is an important component of school security, but it is no panacea.

The good news is that security technology keeps getting better and better. But security hardware and software—and the systems integration expertise that goes with it—does not come cheap.

Based on advice from the technical experts consulted for this Special Report, here are key technology-related considerations you should discuss with your school district clients:

1. Look for PTZ cameras, which point, tilt, and zoom. Due to their ability to cover more space on an active basis, you may be able to use fewer cameras with PTZs, thus saving money for your K-12 client.

2. Make sure cameras provide facial recognition at all entry points to the building. The receptionist should not have to ask visitors, “Could you please step back so I can see your face?”

3. Cameras should be capable of at least seven frames/second, says Ultrasafe Security’s Ron Lander, a veteran of 23 years with the LA County Sheriff’s Department.

4. Cameras should be positioned to afford good sight lines down hallways, into stairwells, and outside restrooms and locker areas.

5. Cameras should have bullet-resistant domes and should not freeze. And never use a “dummy” camera—they don’t serve as a deterrent, says security consultant Ken Glantz.

6. Go for IP-based surveillance systems, rather than analog. “Anyone who’s running coaxial cameras today is outdated,” says Larry Johnson, Security Director, Grand Rapids (Mich.) Public Schools.

‘Architects need to look into the technology of the 21st century. IP-based systems set a new standard for today.’

—John Laney, North Texas Communications

7. Investigate PoE, or “power over Ethernet,” for school districts’ camera and door-locking systems, advises John Laney, Chief Operations Officer, North Texas Communications. PoE passes electrical power along with data on Ethernet cabling. This greatly reduces the amount of wiring needed and makes it much easier to retrofit older schools, says Laney.

8. All doors with access to the exterior should be able to be locked down; if held open more than, say, 30 seconds, a “Door Open” alarm should be sent to the front office and the School Resource Officer.

9. For retrofits, look into locking systems that let you secure doors through the crash bar or door strike, thus making the “open back door” problem much less of a security risk.

10. Help the school district decide on the appropriate locking protocol for classroom doors. Teachers should have the ability to lock doors from the inside, but there should be a failsafe to prevent children from doing so. There are systems that allow the principal to lock down all classroom doors in an emergency, but the teacher should still be able to open the door to let a child in. In no case should a teacher have to lock the door from outside the classroom.

how security in schools APPLIES TO OTHER BUILDING TYPES

Many of the principles and concepts described in our Special Report on K-12 security also apply to other building types and markets.

AEC Building Teams should work with their clients to conduct a version of the “threat assessment” described in this Special Report. Such an evaluation should start at the property line and work inward. Many of the questions that a security team would use in a K-12 threat assessment could be applied to office buildings, hospitals, outpatient facilities, hotels, university buildings, stadiums, convention centers, municipal and state government buildings, and other places of congregation:

- Are there exterior conditions that could compromise security—untrimmed bushes that could provide cover for intruders, or unlocked trash receptacles that could become hiding places for weapons or explosives?
- Are exit doors fitted with alarms in case they are propped open?
- Are visitors, tenants, and other building users “funneled” to a main entry point where surveillance at various levels can be conducted?
- Do the security cameras work? Does anyone monitor them? How often?

As our report shows, design and technology are vital to the safety of children, teachers, and staff in schools, but if the staff and users of other building types are not educated in emergency procedures and don’t rehearse them, the damage from an untoward incident could rise significantly.

Staff training and periodic rehearsals in security measures should be de rigueur for virtually every kind of building with public access—hospitals, retail and office facilities, college student unions, performing arts centers, movie theaters, and so on.

Our report raised the sustainability vs. security question for schools, but that quandary also applies to other public or quasi-public building types and uses, such as office buildings, college residence halls and classrooms, hotel lobbies, and restaurants. Owners and users of these buildings—not to mention the architects, engineers, and construction professionals who design and build them—all want as much natural light as the energy model will permit, but daylighting requires lots of glass, and that could raise concerns about security. Building Teams need to work with their owner clients to balance these occasionally conflicting demands.

One of the surprising findings from our exclusive survey of *BD+C* subscribers was that fully one-third of respondents (33.8%) said they were unfamiliar with Crime Prevention Through Environmental Design, and that only about one in six respondents (16.4%) said they (or their firms) used CPTED principles on a routine basis in K-12 projects. These respondents were selected on the basis of their heavy involvement in school projects. If they don’t know about CPTED for schools, is it also the case that those who design and build other kinds of public or semi-public facilities have no training in security-related matters? That would be very disturbing.

what about METAL DETECTORS?

Stationary metal detectors may be a necessary evil in schools plagued by gang activity, but they usually aren’t effective. “The kids know how to work the system,” says Larry Johnson, Public Safety Director, Grand Rapids (Mich.) Public Schools.

Instead, Johnson equips his 40 SROs with handheld scanners. “We do it randomly and unannounced,” he says. “Sometimes we

run every kid, some days it’s every third or every fifth.”

Inspections have their place, but Johnson prefers to have his officers spend their time gaining students’ trust. “We’ve taken weapons out of our schools, and the information has come from other students who knew about the weapons,” says Johnson.

11. Manual key systems are passé. Keys are too easy to duplicate, or they get lost. IP-based door hardware is the way to go, for new schools or retrofits.

12. Mass notification systems—for robocalls to first responders, parents, and staff—are readily available from manufacturers, but remind school officials that, with people changing their mobile providers all the time, correct phone numbers have to be constantly updated.

13. Work with the school district security team to find the best options for intercom systems, alarm annunciators, internal notification systems, and two-way radios.

14. Make sure bus drivers' radios tie in to the main office or to local police—or both. “With some of these systems, the driver can only talk to the bus garage, and the garage has to call the police,” says security consultant Alan Brockbank. “Precious seconds can be lost, and those few seconds matter.”

15. School buildings should have at least a 100-kW UPS power backup for cameras, DVRs, and annunciation/notification systems. UPS systems should be tested on a regular basis and properly maintained.

16. For new and retrofit lighting, consider LEDs. “They’re a little expensive, but the ROI is fantastic, and you want good lighting for security purposes,” says Lander. “If it comes to a hostage situation, you need light, because not every first responder is going to have a nightscope.”

One last suggestion: Because security technology is changing so fast, your firm should assign a staff member to monitor new products, their costs, and their capabilities, not just for use in schools, but in any security-sensitive sector where your firm has a strong presence—retail, hotel, office, financial services, government, and defense. +

video system gives SRO TWO EXTRA SETS OF EYES



JAYME HAWTHORNE

Collin County Sheriff Deputy George White checks a hallway in one of Anna (Texas) ISD's buildings while monitoring two others on his iPad and Galaxy S4 smartphone.

Anna ISD, about 50 miles north of Dallas, is one of the fastest-growing school districts in Texas. Several years ago, as the district was about to build a new \$58 million school to go along with two elementary schools, a middle school, and an admin/special programs building, Bradley Copass, the district's IT Director at the time, was worried about his security system. “It was just not reliable,” he later recalled. The staff had trouble controlling or operating the 140 or so cameras. Sometimes two or three weeks of video would be lost.

Copass dreamed of having a fully integrated system. “I wanted to tie alarms to doors, so that if somebody didn't have a badge or pulled a door open, we could flag that camera and pull up video from either direction,” he said.

Copass turned to John Laney, Chief Operations Officer with North Texas Communications, for advice. After extensive investigation, they chose the BlueWave Security system. “We wanted a video system where the cameras could talk to the doors,” says Laney. To integrate the system, they brought in 3XLogic.

It took just three days to install 3XLogic's VIGIL Central Management software, at a cost of about \$120,000. The system monitors all 140 cameras and DVRs and notifies school administrators—via email, text messaging, or local alarm screen pop-ups—of possible security incidents. “Every door is networked, so it has its own brain, even if the building loses power,” says Laney. First responders can access the system and get into any Anna ISD building.

The new system also provides something that every school district in the country would love to have: the ability to “see” into more than one building at a time. This enables the ISD's School Resource Officer to remotely pull up video cameras on his iPad or smartphone. The next step: providing that same capability to local law enforcement, so that they, too, could “see” inside any Anna ISD school in the event of an incident.

AEC PROFESSIONALS WEIGH IN ON school security

An exclusive survey reveals that Building Teams are doing their part to make the nation's schools safer in the aftermath of the Sandy Hook tragedy.

BY ROBERT CASSIDY, EDITORIAL DIRECTOR

The great majority of architects, engineers, and contractors who responded to an exclusive *Building Design+Construction* "School Security Survey"—61.4%—ranked "security concerns" among the top two or three priorities for the school districts they serve. As one respondent put it, "School security has come to the forefront of our designs."

The survey was conducted a month before the anniversary of the December 14, 2012, shootings at Sandy Hook Elementary School, Newtown, Conn., where 20 children and six adults were killed by a lone gunman.

Only about one in five respondents (20.5%) said they experienced a rush of inquiries following the tragedy at the school. In response to Sandy Hook, AIA Iowa, Iowa Homeland Security, the State Fire Marshal, the Iowa Department of Education, and others formed the Iowa School Safety Coalition (<http://www.iowaschoolsafety.org/>) immediately after the event. "We publish periodic bulletins and we're doing training on how to improve school safety," said William M. Dikis, FAIA, NCARB, with Architectural Strategies, LLC, and the AIA Iowa representative on the coalition.

Herm Harms, AIA, an architect with Puetz Corp., said K-12 clients of his that had fore-

TABLE 1.

FROM YOUR EXPERIENCE (OR YOUR FIRM'S), WHERE DO 'SECURITY CONCERNS' RANK AMONG PRIORITIES IN THE SCHOOL DISTRICTS THAT YOU SERVE? WHERE DOES SECURITY RANK IN YOUR OWN (OR YOUR FIRM'S) PRIORITIES FOR SCHOOL PROJECTS?

WHERE SCHOOL DISTRICTS RANK SECURITY ISSUES	WHERE I/MY FIRM RANKS SECURITY ISSUES		
Among "top 2-3" priorities	61.4%	Among "top 2-3" priorities	59.6%
Somewhere in the middle	30.2%	Somewhere in the middle	31.6%
Low-level priority	4.8%	Low-level priority	4.3%
Not a priority at all	0.1%	Not a priority at all	0.2%
Don't know/Not applicable	2.6%	Don't know/Not applicable	2.9%

N=461

The degree of concern about security among respondents and their professional firms closely parallels their perception of how school districts see the problem. Only a small percentage of respondents (<5%) said they view security as a low or nonexistent priority for themselves, their firms, or their school district clients.

stalled key security improvements to older buildings moved these improvements to top priority following Sandy Hook. "Even though money is tight, they're still finding ways to make these upgrades," he said.

Other respondents, however, said they've been plugging away on security for a long time. "We already have a security division that is very experienced and have made a priority of door security, upgrades of keying systems, and a door access system with surveillance cameras, remote release, visitor sign-in systems, ID badges, access controls with visitor cards, vision

TABLE 2.

FROM YOUR EXPERIENCE (OR YOUR FIRM'S), WHAT WAS THE RESPONSE TO THE SANDY HOOK ELEMENTARY SCHOOL SHOOTING INCIDENT FROM SCHOOL DISTRICTS THAT YOU SERVE?

Some increase in security-related inquiries	41.6%
Dramatic increase in inquiries from schools	20.5%
About the same level of inquiries as we usually get	16.8%
No noticeable response	13.1%
Fewer security-related inquiries than normal	1.1%
Don't know/Not applicable	7.0%

N=459

Three of five respondents (62.1%) recorded at least some bump in inquiries from school districts following the December 14, 2012, shootings at Sandy Hook Elementary. A substantial group (29.9%) said there was either no heightened response, or that conditions were more or less business as usual.

‘It’s a fine line between having a school be a welcoming place and having it look like a prison.’

—John W. Bollinger, Boulder Valley School District

panels to the front entrance, time locks, and screening visitors for criminal records (with our police department),” said Fleur Duggan, AIA, LEED AP, Construction and ADA Manager, Fairfax County (Va.) Public Schools.

A tiny splinter of respondents (1.7%) said they have no worries about security in their schools. “We don’t have a security problem in our town,” said one. “Can’t happen here,” said another. David W. Myers, Senior Mechanical/Plumbing Designer at LaBella Associates, D.P.C., said most districts his firm works with have the situation under control: “The schools already have basic security measures in place and do not have the funding to upgrade further.”

Others said some school systems are

constantly seeking security nirvana. “The districts we work with are continually pursuing security upgrades, both technological and building modifications.” Another was

less sanguine: “They upgrade where they can with the budget they have.” Carol Ross Barney, FAIA, Principal of Chicago-based design firm Ross Barney Architects, said it’s a matter of priorities: “Our clients are more concerned about tornado storm protection than firearms.”

WHO REALLY GIVES THE GO-AHEAD FOR SECURITY IMPROVEMENTS?

It’s clear from Table 3 that school officials—not parents, voters, law enforcement agencies, or school designers—are the real decision makers when it comes to upgrading security systems in schools. But that doesn’t mean others shouldn’t have a say.

“Best practices tend to include the security expert, school administration, and local law enforcement teamed to provide a system that protects the students and staff and serves the needs of

first responders,” said Lance C. Mushung, AIA, NCARB, Architect/Senior Associate with SSOE Group.

Still, as Table 4 shows, tight school district budgets, coupled with the belief that security upgrades cost too much, impede adoption of improvements. “Most schools upgrade where they can with the budget they have,” said one respondent. Even when upgrades get the green light, said another, “The final system is typically specified below the preferred system due to costs.”

“School security is a priority with parents, but not necessarily with taxpayers, even though they are often the same,” said Jim Princehorn, CPP, a Senior Security Advisor in Rochester, N.Y. “They want secure school buildings but do not realize that a K-12 school is very complex, with many entrances, many other entry points (loading docks, roof hatches, etc.), and many types of occupancy—clubs, sports, concerts, church organizations, Scout meetings—all of which complicate the planning of a secure facility. Often the access needs of one group affect the security planning of other sections of the building.”

One approach may be to avoid trying to bite the whole apple. “Security upgrades

TABLE 3.
FROM YOUR EXPERIENCE (OR YOUR FIRM’S), WHICH OF THE FOLLOWING IS THE SINGLE MOST INFLUENTIAL PERSON OR GROUP IN DECISIONS RELATED TO UPGRADING SCHOOL SECURITY?

School administrators/principals	37.6%
School boards	24.4%
School facility departments	7.9%
Architects/school designers	7.3%
Parents/caregivers	7.3%
School district security committee	5.1%
Local law enforcement	3.7%
Security consultants	2.0%
State/local government	1.8%
Voters in the school district	1.8%
Teachers	1.1%
Students	0.2%
	N=455

School officials—administrators, principals, and board members—were deemed the power brokers when it came to decisions about improvements to K-12 security systems, according to a solid majority (62.0%) of respondents. The message for AEC firms: Work with officials in the school districts you serve to educate them on the role of security in design, construction, and master planning of their facilities.

TABLE 4.
FROM YOUR EXPERIENCE (OR YOUR FIRM’S), WHAT REASONS DO SCHOOL OFFICIALS GIVE FOR NOT UPGRADING SCHOOL-BUILDING SECURITY DESIGN/SYSTEMS? (MULTIPLE ANSWERS ACCEPTED.)

“No budget for security upgrades”	53.2%
“Initial cost too high”	38.8%
“Don’t want our schools to look like fortresses or prisons”	25.8%
“Don’t need security upgrades, existing systems are adequate”	22.7%
“We’ve got other priorities”	12.0%
“Not enough staff to watch the cameras”	7.7%
“Security threats can’t happen here”	3.6%
“Too many security options to choose from”	2.4%
Don’t know/not applicable	12.7%
	N=449

Not surprisingly, money problems—no funds allocated, systems too expensive—are the main reasons school officials give for not upgrading their facilities’ security systems, according to AEC professionals. At the same time, respondents report only a small percentage of their clients (3.6%) aren’t worried about security threats, while nearly one-fourth (22.7%) said their K-12 clients are happy with whatever security systems they have.

can be phased in,” said Doug Titus, CFM, an education security expert with manufacturer ASSA ABLOY Door Security Solutions. Schools can implement the highest-priority security upgrades first, he said, then phase less crucial improvements over time.

GETTING DOWN TO THE NITTY-GRITTY—UPGRADING EXISTING SCHOOL BUILDINGS

Judging by the responses in Table 5, it would seem impossible to find an existing school, no matter how new, that didn’t have

some security deficiencies. And remediating older schools for security purposes is no picnic. “Design is so much more difficult (as in strategic) when retrofitting a quarter-century-old (or even older) facility, as most educational facilities are,” said Connecticut architect and Certified Architectural Historian James Gibbs, AIA, NCARB.

Whether certain technical experts should be included in planning security upgrades is another consideration. Looking at Table 6, James E. LaPosta, Jr., FAIA, LEED AP, Principal/Chief Architectural Officer with JCJ Architecture, said, “I would have expected a higher

percentage of engagement with law enforcement or security.” Tech consultants also seem frustrated when school districts dismiss their expertise. “The trouble we find as integrators is finding school districts that will take the responsibility to train and understand the layers of security and how to implement those layers for an effective security solution,” said John Laney, a systems integrator with North Texas Communications.

Crime prevention through environmental design (CPTED) drew support from many respondents (Table 7), including Doug Lau, AIA, LEED AP, with Brian R. Bloom—Architect. “We always seek ways to make the

‘Design is much more difficult when retrofitting a quarter-century-old facility.’

—James Gibbs

TABLE 5.
FOR UPGRADES OR RECONSTRUCTION OF EXISTING K-12 SCHOOLS, WHICH OF THE FOLLOWING SECURITY-RELATED CONCERNS HAVE YOU (OR HAS YOUR FIRM) ENCOUNTERED? (MULTIPLE ANSWERS ACCEPTED.)

Inadequate design of front-office entryway	68.0%
Open/unlocked exit doors	59.5%
Inadequate perimeter protection (fencing, gates, bollards, etc.)	49.4%
Inadequate or inoperable CCTV/video camera system	48.3%
No visitor check-in (identification, visitor badge)	38.7%
Inadequate security lighting (exterior or interior)	37.0%
Unable to lock classroom doors from interior	36.8%
Unsecure parking conditions	36.4%
Compromised master key system (missing keys)	36.4%
Unsafe exterior conditions/hiding places (bushes, trees, trash containers, electrical vaults, etc.)	34.4%
Malfunctioning or outdated annunciator/communication system	32.7%
Inadequate or insufficient security-related signage	20.3%
Insufficient IT bandwidth to support security system	13.4%
Unrestricted access to roof, basement, stairwells, hallways, or mechanical spaces	20.1%
No security-related problems in our K-12 school reconstruction projects	4.1%
Don’t know/not applicable	8.2%
	N=462

That ol’ bugaboo of school security—poor entryway design—was reported by more than two-thirds of respondents (68.0%), followed closely by open-exit-door syndrome (59.5%). The wide array of security shortcomings reported by survey respondents may be the most important indication of the significant risk at which existing schools are operating.

TABLE 6.
IN THE LAST TWO YEARS OR SO, HAVE YOU (OR HAS YOUR FIRM) INVOLVED A SECURITY CONSULTANT OR LAW ENFORCEMENT AGENCY IN SECURITY PLANNING FOR NEW OR RECONSTRUCTED K-12 SCHOOLS?

No, or very rarely	38.0%
No, but we intend to do so in the future	10.2%
Yes, occasionally, if requested by the school district	12.6%
Yes, we do this on almost all K-12 school projects	11.7%
Yes, we have security expertise on staff	9.3%
Yes, occasionally, if we perceive a need	7.2%
Don’t know/not applicable	10.9%
	N=460

A fairly even split was evident between respondents who said they use a security consultant or law enforcement agency for school planning or have security expertise on staff (40.8%) and those who do not (38.0%), with another 10.2% saying they plan to do so in the future.

TABLE 7.
DO YOU (OR DOES YOUR FIRM) USE ‘CPTED’ (CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN) STRATEGIES IN YOUR K-12 SCHOOL PROJECTS?

No, or very rarely	19.7%
No, but we intend to use CPTED in the future	8.3%
Yes, we use CPTED routinely as a matter of practice	16.4%
Yes, if requested by the school district	12.3%
Yes, we use CPTED when it is required	9.4%
Don’t know/not familiar with CPTED	33.8%
	N=417

A majority of respondents (53.5%) either have no familiarity with CPTED (33.8%) or have used it only rarely (19.7%). On the positive side, a sizable contingent (38.1%) use CPTED in school projects, with another 8.3% saying they plan to do so in the future.

architecture address environmental needs, and using CPTED principles makes sense for designing new education facilities,” he said. “We use architectural passive solutions to address security, then use electronic systems as an additional layer of risk management.”

LITTLE RED SCHOOLHOUSE—OR THE NEXT FORT KNOX?

One ongoing concern has to do with the image of the school in our culture. There’s a strong aversion, particularly among architects, to making school buildings look hardened. “Unless we build schools like fortresses or windowless prisons (instead of friendly community places of learning and interaction), and spend millions on security and security staff, no amount of reasonable security will stop [such incidents] from happening,” said Daniel E. Michal, NCARB, Senior Project Architect, Hatch Mott MacDonald.

Schools don’t have to look like fortresses to be more secure, said Alan Brockbank, CPP, CSS, President, B-Secure Consulting. “Most schools can benefit from developing and enforcing security-related procedures, from security awareness training for staff, faculty, administrators, bus drivers, students, parents, and community members, and from assessing their current systems to ensure they are working properly,” he said.

Balancing the demand for higher levels of security with the aspiration for high-quality design takes seasoned judgment, said John W. Bollinger, PE, Mechanical Engineer/Project Manager, Boulder Valley (Colo.) SD. “It’s a fine line to walk between having a school be a welcoming place and having it look like a prison,” he said. “We need to be conscious of the security needs while still making the building function as a community resource.”

‘We can certainly make school facilities more secure, but we can’t make them perfect.’

—Dale Junttila

TAKING THE BIG-PICTURE VIEW

Schools need to take a comprehensive approach to security, said Charles A. Berns, President, R. L. Sohol General Contractors, Inc. School perimeters must be protected. Academic areas should be segregated from community activity areas. Perimeter doors must be operable and equipped with electrified sockets for lockdown. Intercoms and two-way radios have to be fully operational. Proper security lighting must be in place. Entryways must be designed for positive visitor control.

Most important, said Berns, “Security must be applied in a consistent and uniform manner across the school district.”

Looking at the panoply of security options in Table 8, Dale Junttila, President of Finnwood, a facilities project management firm in Eden Prairie, Minn., said, “Even with all these security measures in full working order, an individual or group might still breach the school.” His conclusion: “We can certainly make school facilities more secure, but we can’t make them perfect.” +

TABLE 8.

WHICH OF THE FOLLOWING SECURITY PRODUCTS OR SYSTEMS HAVE YOU (OR HAS YOUR FIRM) SPECIFIED OR USED IN A K-12 SCHOOL PROJECT IN THE LAST 18-24 MONTHS?

Access control systems (locks, key controls, emergency exit door hardware, gate/portal access control, security door hardware)	81.7%
Communications systems (call boxes, two-way radio, IP ceiling/wall speakers, IP horns, RFID/NFC systems, annunciation systems, mass notification, emergency signaling/PA systems, panic buzzers, alarm control panels)	71.9%
Protective lighting (security lighting, IP lighting, perimeter/area lighting, LED lighting)	71.9%
Video surveillance systems (CCTV, video cameras, IP cameras, digital recorders, archiving/backup systems, data recovery, video intercom)	68.9%
Intrusion detection (security alarms, motion/object detectors, metal detectors, panic control)	51.3%
Network security systems integration (IP networking systems, UPS backup, integrated management/BAS systems, fire/life safety systems)	51.3%
Identification/authentication systems (card/badge readers, printers)	50.6%
Security/emergency signage	38.2%
Physical barriers (perimeter protection, security fences, bollards, protection barriers, retractable wedges)	30.0%
Building hardening systems (blast-resistant glass/film/walls, security doors)	26.5%
	N=437

AEC firms are installing plenty of access control, communications, protective lighting, and video surveillance systems in K-12 schools, judging by the high level of response to specification or use of these components. Yet barely half have employed intrusion detection (51.3%) or identification systems (50.6%), which security consultants say should be important elements of any school security system. Even security/emergency signage seemed low (38.2%).

METHODOLOGY

The survey was conducted November 18–25, 2013, across a sample of 9,929 current subscribers to *Building Design+Construction* who are actively involved in the design and construction of K-12 schools and who specify security and life/safety products and systems. A \$25 gift certificate was awarded as an incentive to the first 10 respondents to complete the survey. A total of 462 usable responses were recorded, resulting in a margin of error of 4.45% at the 95% confidence level. Respondents by profession: architects, 58.2%; engineers, 20.8%; construction professionals, 17.3%; others (including school officials, security consultants), 3.7%.