

# SchoolConstructionNEWS

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# How Technology and Design Can Improve School Safety and Security

By Phil Kirk

Student safety and security have been a concern for school administrators for decades. Gun violence, like what we witnessed in Newtown and Columbine, has made it center stage. Administrators are concerned about external threats, such as kidnapping or the abduction of students, but also concerned about internal dangers, such as gang activity, fighting, sexual assaults, bullying, weapons, drugs, alcohol, theft and vandalism. The time and resources expended addressing these concerns can be a drain on time and resources for educating our children. In fact, according to The Economic Impact of School Violence by Plan International and Overseas Development Institute, school violence costs U.S. taxpayers \$7.9 billion annually.



Kirk

The most recent statistics available from the National Center for Education Statistics reports that during the 2009-2010 school year, 85 percent of public schools recorded that one or more incidents of violence, theft, or other crimes had taken place, including 1.8 million violent incidents; 5,000 incidents of firearms or explosives; 72,000 incidents with a knife or sharp object; and 33 school-associated violent deaths occurred in elementary and secondary schools in the U.S.

On the front lines of this war for student safety are teachers and administrators, whose primary job and training is nurturing young minds and educating our future leaders, not fending off armed attackers. Although teachers and administrators diligently want to provide this protection, and will go to heroic lengths to do so, as we saw in Newtown, the simple fact is they lack the equipment and single-minded focus necessary to be a formidable defense force against all the dangers that children face in our schools today.

## Campus Security

The addition of school resource officers (SROs) from police and sheriff departments, as well as private security companies, is a good start. To have one or more SROs in a school to focus only on protecting the kids is a great idea that has had a positive effect in schools across the country.

Tina Ingram, director of security for Durham Public Schools in North Carolina, is the first to extol the value of

having trained staff in schools as both a deterrent and a response force for a wide variety of situations. However, economics often dictate staffing levels that may not be ideal.

If we consider the University of California Riverside's police depart-

ment's staffing matrix for special events as a good baseline, our public schools need more SROs than the budget allows. This matrix calls for a speaking event with 500 attendees to be staffed with three officers and one sergeant, and for a dance with 1,000-plus atten-

dees, to be staffed with five officers, one sergeant and four private security guards. This is a far cry from the SRO staffing in most schools. Bixby, Okla. offers a good example of SRO staffing. A town of approximately 21,000 people, it is adjacent to Tulsa and has nearly a quarter million people living within 10 miles of downtown, and more than 5,400 students as part of the Bixby public school system. Bixby only has two full-

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## BOARD MEMBER SPOTLIGHT

### Board Member Spotlight, from page 5

time SROs that split their time across seven campuses.

Ingram also reminds us that it is not just during the school day that security is a concern; it is 24 hours a day, seven days a week. This is why Durham Public Schools have incorporated technology tools into their safety and security program.

### Smarter Buildings

Although a large number of schools across the nation have incorporated heightened ID procedures for school visitors, including driver's license scanning technology, this form of security only works after the person has entered the building, and then only if the visitor voluntarily reports to the office and requests a pass to be on campus.

As a case in point, on April 30, 2013, a Philadelphia woman was charged with abducting a 5-year-old girl from school by posing as the girl's mother. A report says the woman went into the school office, scribbled a name on the sign-in sheet, and was able to proceed to the child's classroom without being required to present identification.

Ingram sums up the situation in her goal for security at Durham Public Schools, "To create an environment where the students feel safe and visitors feel welcome." She offers that the best way to do this is to limit the number of access points to any school and have the ability to monitor the areas around the building. Door access controls and video surveillance are two of the technologies that Ingram has employed.

Mark Reid, operations manager for Access Control Consultants, part of the Brady family of companies that provide comprehensive building solutions for commercial and industrial facilities across North Carolina, said, "Proper security starts at the driveway entrance and in the parking lot. Modern IP video systems can combine cameras, with video resolution capable of reading license plates and gather face images, with software that can include facial recognition, database comparisons and staff notifications. This can help SROs and school administrators identify 'people of concern' before they ever enter the building."

"Moreover, the software can be programmed to provide alerts of activities or objects that may pose a threat," according to Reid. He offers a few examples of what video systems can identify including: student activity or gatherings at unusual times or places, guns being moved in or out of vehicles or lockers, out-of-the-ordinary bulges under clothing that could indicate a hidden weapon, and even unattended packages and book bags. Not only will the system alert the SROs and school administrators, it can be programmed to

alert local law enforcement and provide them with real-time video.

In short, it is about leveraging smart building technologies. Smart buildings combine sensor/detection systems with automated control systems managed through a set of software programs. Many schools are already integrating smart building technology to save on utility costs with systems that can be programmed to automatically turn on or off lights and environmental systems. These systems can easily be expanded to unlock or secure areas of the building for increased security.

In the case of school safety systems, this can include specially programmed mobile devices provided to SROs and school administrators that notify them of concerns, provide real-time video feeds, as well as offer one-touch notification of law enforcement and emergency lock down of the building. This type of remote access has proven to be a valuable asset to Durham Public Schools.

More importantly, smart buildings document activity. Ingram has experienced great success with video systems as a tool to evaluate and respond to reports that come in from a variety of sources, including students that are encouraged to be aware of their surroundings.

Reid notes that smart building technologies can also have a positive impact on budgets, which Ingram confirms by noting that the technology has played a role in reducing damage and loss of school property. There is also the opportunity to shift some security costs out of the operations budget. In the case of new school construction, the technology can be part of construction costs paid for out of capital expenditures or school bonds. In existing schools smart building technology can be considered a capital improvement as the system includes fix assets with depreciation schedules.

### Better School Design

Improving school safety for the long-term really boils down to better school design. Ingram is quick to remind us it is all about access control. "Multiple entry points, multiple buildings and the ability to access classroom areas without passing through the main office all provide challenges," said Ingram. Even the placement of windows and the location and design architectural elements such as hallways and stairwells can impact safety and security. Ingram encourages design and construction professionals to include security consultants in the planning process. Often a little change, such as moving a door from one wall to another, or adding or removing a window can improve the ability to cost-effectively monitor activities and respond when concerns arise.

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### Suppliers, from page 8

with creating cutting-edge, landmark schools – some of the most advanced K-12 buildings in Texas – CMTA focused first and foremost on the building's energy efficiency.

CMTA used exterior glazing as well as daylighting windows placed high towards the ceiling to drive natural light into the classrooms. Shelves were installed on the inside and outside of the windows in order to eliminate glare. Daylighting was also incorporated into the lighting control system to control the foot-candle levels in the classroom.

"Based upon the existing elementary schools with the same floor plan, Kinder Ranch was saving the district around 46 percent on utility costs for the same time period," said Schneider. "From September 2011 to January 2012, Kinder Ranch cost \$19,594 to operate, while the existing elementary costs \$36,313."

Energy usage for the full 2011 to 2012 school year totaled 24.5 kBtu per square-foot per year. The energy savings was approximately \$54,000 for the school district when compared to their similar facilities.

### The Lighting Ecosystem

Creating a better learning environment in a fiscally responsible way should be a key priority in both K-12 and higher education facilities. When designing lighting for an education facility, quality of light, the return on investment, meeting building codes and sustainability standards should be taken into account.

Light quality is what ensures occupants are visually comfortable. Integrated electric lighting, daylighting and controls solutions deliver the right kind of light, the right amount of light, exactly where you need it, and only when you need it, all at the lowest total lifecycle cost.

It is important to think past the initial cost and focus on the total lifecycle cost, including initial equipment cost, energy costs and maintenance costs. All of the lighting solutions that have been presented – from LEDs, to daylighting to controls – are all sustainable solutions for a school's lighting systems.

*As vice president of Education Solutions for Acuity Brands, Tim Hogan leads efforts to create and deliver better lighting solutions for the K-12 and higher education markets.*

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