CASE STUDY

Metal Detector Implementation in K-12 Educational Facilities

Introduction

Parents, thought leaders, and students are no longer willing to revert to the status quo soon after each new school tragedy. These increasingly vocal constituents are asking for change and putting pressure on school administrators and school boards to find solutions. What can and should be done?

First, it is important to note that a school is not the same as a stadium from a security standpoint. A school environment is more complex from the standpoint of layout, and its physical security is correlated with the emotional and psychological health of its students. It must concern itself with issues such as depression and bullying, and must provide resources to help shepherd students to healthy adulthood. When such preventative efforts fail, there must be a last line of defense that is sufficient to protect the school from violence. That's where improved perimeter security comes into play.

Background

The subject of this case study is a real school district (the "District") which became convinced it had to quickly expand security at its school facilities. It faced real limitations on the amount of time, money, and resources available to make those improvements. The reason for their sense of urgency was the fact that a school in the District had suffered a mass casualty shooting. At the time of the event, the District had a comprehensive security plan in place which included layers of security, adherence to state school safety protocols, training, drills, audits, and other useful features.

The teachers and administrators at this school district knew the students and cared for their emotional and physical needs. They did not overlook "red flags" or warning signs. In this case, the assailant was a District student who "flew under the radar", avoiding detection until the attack occurred.

Strategy, Objectives, and Planning

In the aftermath of the shooting, the District resolved that it would do all that it could to prevent such an attack from ever happening again in one of its schools.

The resulting plan for seamless, efficient perimeter security in each District school included these elements:

- Reducing monitored building access to a small number of "open access" entrances on each campus (three entrances at the high school, two entrances at the middle school, and one entrance at each of the elementary schools)
- Monitoring the "closed access" entrances which were controlled using remotely-activated locks. This was done while taking fire safety building codes and regulations into account
- Adding audible alarms to closed access entrances
- Monitoring all entrances continuously in real-time with security cameras and security personnel
- Making facility modifications to some entrances which would be open access during school hours
- Installing walk-through metal detectors at all open-access entrances
- Adding full-time security screeners to each campus in the district
- Increasing the number of law enforcement officers on campus during school hours
- Implementing screening procedures in consultation with security experts
- Clarifying dress code and ID badge guidelines for ease of identification and screening

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A comprehensive plan to improve school perimeter security requires resources, changes in habits, and the willingness of groups and individuals to work together in ways they previously had not.

Equipment and Capacity Planning

Once their initial planning was complete, the District consulted with Garrett Metal Detectors regarding ways walk-through metal detectors could help secure each school facility in the District.

Site assessments were done by Garrett to identify the type and number of metal detectors needed, and to give advice on procedures and implementation. Garrett also gave guidance on the layout of the metal detectors at each open access entrance, as well as the number and layout of associated equipment such as hand-held scanners and screening tables. School administrators made adjustments to the recommendations as they saw fit to tailor the plans for each of their facilities. In addition, to prevent a security gap at the closed access entrances, video monitoring and loud audible door alarms were added. Any such breach is immediately identified and investigated by trained security personnel.

Cost

High quality metal detector equipment and the related furniture and accessories typically cost between $3,500 and $4,000 per detector. The District high school required nine detectors to screen approximately 1,500 students at three open access entrances. The four campuses in the District required a total of 19 detectors.

The District was able to staff the security checkpoints with a combination of faculty and hired security screeners. In all, the District added five law enforcement officers and ten security screeners. The total annual cost of the additional personnel was approximately $500,000.

Installation and Training

Installation was done two weeks before the first day of school in the new academic year. It took less than one day to install 19 metal detectors at four facilities. At the same time, Garrett trained law enforcement and building operations personnel on the setup and operation of the metal detectors. Administrators were also trained on the basics of the metal detection technology and on proper screening techniques.

The District communicated with parents and students on the new security procedures, explaining the impact students may face in terms of delays and arrival times the first week of school. Advice was given to students on actions they could take to help ensure smooth operations from the beginning. Information on the "Ideal Backpack™" was communicated to parents to help them purchase the kinds of school supplies that would make screening operations more efficient. The communication campaign culminated with back-to-school meetings at the high school with students and parents that included a review of new procedures and a metal detector demonstration by Garrett.

The final training of screeners and faculty was held a few days before the start of school. At this time, some students with backpacks were present to help demonstrate the procedures.

Screening Methods

The most time-consuming process of security screening is that of checking bags that accompany virtually all students. The District had two important objectives which had implications on screening procedures that would be needed for the inspection of bags:

1) Zero weapons missed, and
2) Minimal wait times at open access entrances

There are three main methods of bag screening as it pertains to security checkpoints with metal detectors in school environments:

1. ***Manual:*** requires every bag to be checked every time. This is very labor and time intensive, and bag checkers must be skilled and very vigilant in order to avoid missing intentionally or unintentionally hidden items.
2. ***Clear/mesh bags:*** usually involves smaller, clear bags that can be screened visually. These are less popular with students in that such bags inhibit

These are examples of low-metal school supplies which can pass through a metal detector without alarming when the detector is properly calibrated to standard school settings.

personal expression and can expose personal items to public view. This system also requires a "plan B" option for bag checking of entrants unaware of the clear/mesh bag policy.

3. ***Ideal Backpack:*** This District chose Garrett's recommended Ideal Backpack method, and communicated the policy and purchasing advice during the back-to-school period. Parents and students were encouraged to purchase widely-available school supplies that are completely or mostly non-metallic (i.e., replacing metal three ring binders with plastic binders, and the use of backpacks with smaller metal zippers). When a student arrives at the security checkpoint, they pull out any items that are known to contain detectable levels of metal for a visual inspection and to be passed around the detector. The student then carries his or her backpack, which contains the rest of their possessions inside it, through the walk-through metal detector. This greatly maximizes effectiveness of the inspection process.

Post-Alarm Screening

Once a person triggers an alarm on the walkthrough, he or she must enter a secondary, post-alarm screening in order to identify the source of the alarm. There are two methods for performing the post-alarm screening:

1) Ask the individual to remove metallic items in their possession and to walk back through the walkthrough for a second try. If the secondary screening fails, the person is asked to step aside for screening with a hand-held scanner.

2) Skip the second pass through the walk-through metal detector and direct the person to the screening area, where the cause of the alarm is investigated using a hand-held metal detector until the alarm-creating source is located.

If the demand at the security checkpoint is light, it is usually easier to ask the person to pass through the walkthrough a second time. If demand is heavy, overall flow through the checkpoint may be improved by keeping the line moving through the walkthrough and addressing the alarm in the hand-held screening area.

Staffing

There are four basic staffing roles that are needed for a well-functioning security checkpoint:

1) *Pacer*—one per checkpoint, positioned at the entrance to the checkpoint upstream from the screening area. The purpose of this position is to encourage the orderly flow of students into the metal detector lines and to instruct/remind the students what to do to prepare to be screened.

2) *Bag Check*—one per walk-through detector. This person performs the bag checks according to the bag check method that has been selected.

3) *Screener*—one per walk-though metal detector. This person tells each student when to enter the walk-through metal detector and monitors the detector for alarms. If the student alarms, the screener instructs them on how to participate in the post-alarm screening.

4) *Law Enforcement Officer*—one per checkpoint. Garrett recommends each security checkpoint have at least one licensed law enforcement officer present to handle uncooperative students and to deal with any weapons or illegal items that might be found during screening.

At the District, the main entrance to the high school was outfitted with four walk-through detectors. This checkpoint was staffed with one pacer, one

law enforcement officer, and a bag check/screener pair for each of the metal detectors, for a total of ten staff members. Security checkpoints at the middle school were staffed in the same way. The District chose not to screen students at the elementary schools but would instead screen all adult visitors. This resulted in a need for just one or two staff members at the elementary school facilities.

First Day Operations – What to Expect

Garrett recommends on-site first day support by skilled and experienced personnel for all K-12 implementations to minimize delays. Program results normally improve each day for the first week or two.

In the case of the District, the three levels of school facilities (high school, middle school, and elementary school) implemented their new security procedures on three consecutive days, with a Garrett team on hand to assist and monitor the process.

On the first day, implementation staff should arrive at least thirty minutes before the doors open to:

- Review security checkpoint layout, including placement of associated bins, screening tables, mats, lane dividers, and hand-held detectors.
- Review walk-through metal detector settings.
- Ensure that trained staffing is in place, and that their questions have been answered.
- Review equipment operation. Check the hand-held scanners to make sure they contain good batteries. Power up the walk-through metal detectors and check for unexpected interference and proper operation.

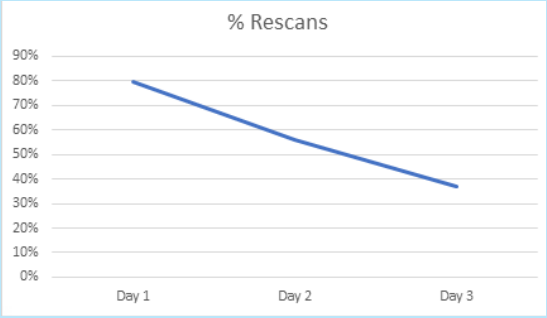
In the case of the District, the first day support team found and addressed several minor issues before the doors opened. In addition to allowing extra time prior to arrivals, the District decided to suspend the penalties for tardiness during the first week of school to keep frustrations in check during implementation.

Learning Curve – Week One Efficiency Improvements

During the first week of school at the District, data was collected to measure the performance of the program for the first few days. This real-world data is indicative of the performance that should be expected for a well-designed, well-implemented program. The following observations were made at the high school:

	Day 1	Day 2	Day 3
% Rescans	80%	56%	37%

- On Day 1, four out of five students had to undergo secondary screening.
- By Day 3, the secondary screening rate was down to one out of three students.



	Day 1	Day 2	Day 3
Worst Entrance Time Cleared	7:40am	7:20am	7:07am
Best Entrance Time Cleared	7:11am	7:09am	7:05am

Several weeks into the new school year, the District reported that rescan rates continued to decrease, and that all entrances continued to clear quickly enough so that only late arrivals failed to progress through the checkpoints in time to arrive at their first class before the morning bell. Students and parents also overwhelmingly report that the program makes them feel safer, which is a key benefit of such security programs.

Conclusions

This case study was written to convey leading-edge thinking and a real-life example of implementing effective perimeter security for K12 school facilities. The hope in publishing this information is to inform and to encourage school administrators, school board members, state officials, and parents to consider and then adopt efficient and effective security measures to protect students from the threat of school violence. Walk-through metal detection technology is mature and affordable and can be used to create an effective last line of defense for our schools. The time to take action is now—before the protection is needed.

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