



School Metal Detectors - A New Approach

Ballistiglass

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This white paper on school security was made possible by the ingenuity, courage, and dedication exemplified by Superintendent of Jay County Schools in Portland, Indiana, Mr. Jeremy Gulley. His ideas, attention to detail, and indomitable spirit in protecting our nation's students against the scourge of school shootings have provided a pathway for school administrators to implement metal detection as part of a multi-layered approach to school security. We at Ballistiglass are grateful for his leadership.

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Introduction

To implement any new security technology, a school district must satisfy three areas that can present opposition: cultural, political, and fiscal.



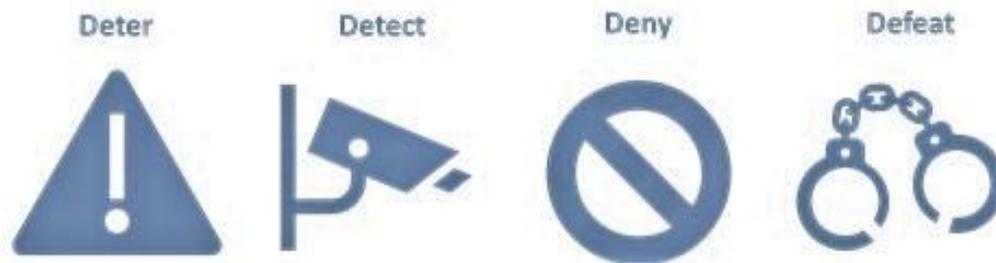
Failure to overcome all three barriers is a prescription for paralysis. In the case of metal detectors at schools, the cultural barrier is manifested as an aversion to having a school “feel like a prison.” Passing through a metal detector can often make a subject feel as if they are not trusted. They may feel that the security protocol is an invasion of their privacy and that it is an affront to their personal and civil liberty. Hijackings in the 1970’s and 80’s necessitated the use of weapon screening at airports, yet the physical experience of entering the metal detector archways and being subject to pat-downs due to false-positives with the audible fear-inducing buzzers have greatly contributed to the cultural barrier (see figure 1). Even while being completely innocent, a traveler may briefly experience the fear that they have done something wrong – all because their belt buckle set off the alarm. In the school setting, this is detrimental to the learning environment. A school must be a place for academic pursuits and achievement, yet to have this - students must feel secure from violence while at the same time feel trusted. Striking the right balance which achieves both aims is the challenge in school security. In this paper, we describe how Superintendent Gulley has accomplished this.



Figure 1. Former Secretary of Homeland Security Jeh Johnson entering a metal detector at a TSA security checkpoint.

The 4 D's of School Security

Without overcoming the cultural barrier, there is little hope in tackling political issues and far less motivation in addressing fiscal concerns. Successful implementation of weapons detection at schools requires the understanding that school security be addressed holistically. A multi-layered approach must be employed so that a failure at any one layer does not necessarily lead to a catastrophic outcome. For this, security against a gunman can be broken down into four layers in a specific order (the four “D’s”): **deter, detect, deny, and defeat.**



For simplicity to illustrate the four D's, let's use the United States Army post of Fort Knox where the national gold reserves are kept as an example. Deterrence, a psychological effect, is clearly achieved because it is widely known that any attempt to breach the security at Fort Knox is near impossible. The advanced sensor technology (cameras, motion sensors, metal detectors, etc.) there would almost certainly detect any attempt by an intruder. The physical barriers to reaching the gold are legion. Even if one were to evade detection, the vaults would deny access for the criminal to the gold. Finally, it is well-understood that armed guards would quickly defeat (“neutralize”) the suspect. Since its opening in 1935, no one has even attempted an attack on Fort Knox. This is testament to the power of effective deterrence established by the layers of security.

Superintendent Gulley's approach to implementing the use of metal detectors at his schools in Jay County, Indiana has successfully overcome the cultural barrier. He accomplished this by fundamentally changing the protocol in which metal detectors are utilized. His primary goal is to deter a person from bringing a gun into the school in the first place. Of the four D's, “deter” is by far the most important and most effective layer in school security. Intuitively, no guns being brought into schools means no school shootings. Of note, Superintendent Gulley also addressed the other three D's (detect, deny, and defeat) because no single layer guarantees protection. Any layer of security implemented at a school or even Fort Knox is never 100% undefeatable. For a gunman to carry out a mass shooting, he or she has to defeat all four D's. For a school to prevent a mass shooting, only one of the layers must be successful – preferably “deter”. The more layers of security that are present, the lower the probability of a tragedy occurring.

Establishing a Deterrent

Superintendent Gulley’s use of a metal detector in the school setting is primarily to establish a deterrent - the first “D” by effective use of the second “D” (detect). This is predicated on the theory that If a would-be gunman, student or otherwise, knows that a school utilizes a metal detection protocol, they would be far less likely to bring a gun into the school. What makes Superintendent Gulley’s approach different is that he utilizes the metal detector in a random fashion. To establish a deterrence, screening every student every day is unnecessary and is one of the main objections of the cultural barrier mentioned above. By screening only 10-20% of the students (chosen randomly), it is quickly understood by the entire student population that metal detectors are being implemented at the school. Furthermore, it is not necessary to perform the screening every school day. The idea is to have the screening frequent enough to establish and maintain the deterrent, but not too frequent as to over-stretch resources or negatively impact the learning environment. The screening schedule must be randomized to prevent pattern recognition which would degrade the deterrent. An effectively randomized schedule, for example (see figure 2), may be to screen on day 1, 3, 8, 9, 15, 22, 27, 38, 40 and so on with a few back-to-back days thrown in to avoid the impression of “today there was a screening so there won’t be one tomorrow.” Avoiding predictability is paramount. An example of a similar type of effective deterrent is the random drug testing of airline pilots. Being selected for a random drug test is an uncommon event for a pilot, yet the greater than zero probability is enough to establish the deterrent.

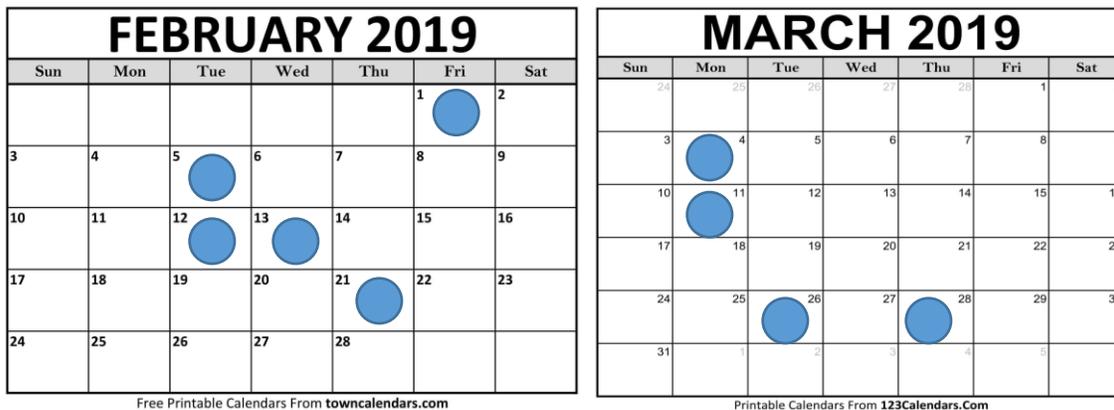


Figure 2. Example of a randomized screening schedule.

The BallistiScan Stealth Metal Detector

Metal detectors work by sensing changes in the magnetic field caused by moving metal objects. As a person carrying a metal object moves past a metal detector, the metal object will alter the magnetic field around the sensors which the metal detector will detect. Objects with magnets or greater amounts of metal will give a stronger signal. This is why we are asked to remove all metal objects from our person at the security checkpoint at airports before entering the metal detector archway. Detecting weapons is, of course, the primary goal. Setting off the detector with a cell phone in your pocket is considered a false positive and is undesirable.

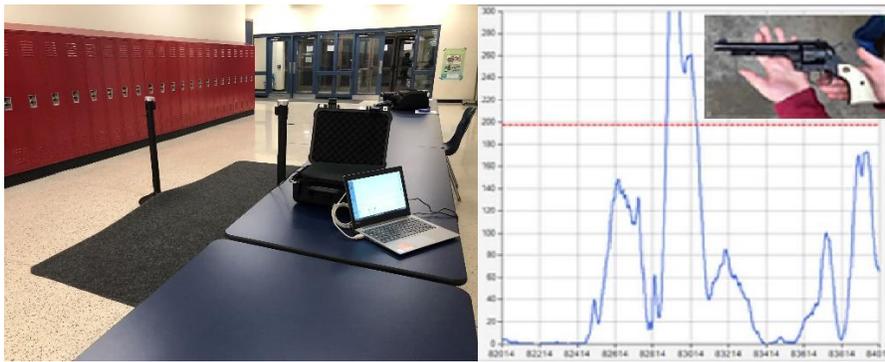


Figure 3. The BallistiScan Stealth Metal Detector System. Figure 4. Signal as depicted on graph.

Reducing student anxiety when using metal detectors is vital to avoid a “prison like atmosphere.” For this purpose, Superintendent Gulley chose to use the new BallistiScan Stealth Metal Detector system from Ballistiglass (see figure 3). Unlike the imposing physical structure seen with TSA-style metal detector archways, the BallistiScan uses small sensors that fit on top of barrier poles so that a relaxed atmosphere is maintained. This small, portable metal detector displays the detected signals in real time on a laptop so that an attendant can observe for spikes on a graph (see figure 4). If a student causes for the signal to go over a defined threshold (red dashed line in figure 4), the attendant can calmly request a secondary screening of the student and implement follow up screening protocols (e.g. using a Garrett wand) if necessary. The software on the computer allows for an audible alarm to be triggered when the threshold is exceeded, but we recommend against the use of audible alarms to keep anxiety as low as possible. Because the BallistiScan system is small and portable, it can be deployed in under ten minutes and can also be used to provide security at school sporting events and school dances. In fact, the portability coupled with Superintendent Gulley’s randomized approach allows the system to be shared as a resource between schools. A small pool of BallistiScan systems is all that is required to effectively establish a deterrence at several schools. Since the units are not used every day at any given school, the pool of units can easily be rotated throughout the school district. The sharing of this resource as a pool significantly reduces the effective unit cost of the BallistiScan system thus helping to overcome the fiscal barrier to implementation.

Metal Detection Protocol

7440B - METAL DETECTOR SEARCH PROCEDURES (from NEOLA 2011)

The principal shall be responsible for the monitoring and enforcement of regulations relative to metal detector electronic search procedures. The principal shall have the authority to request metal detector searches, and electronic searches shall not be conducted in the absence of such request. The purpose of the metal detector search is to discourage students from bringing weapons into the schools. Accordingly, metal detectors may be used at Corporation events, schools and school-related functions of such schools, on a random and periodic basis.

All students, staff members and visitors entering events, schools and school-related functions of such schools are subject to search.

Metal detector searches will be conducted by local police using magnetometers (also known as walk-through metal detectors) and hand-held scanning devices, and monitored by principals.

- A. Students, staff members and visitors shall not be informed in advance regarding the specific dates on which, or the locations where, metal detector searches will occur.

- B. Prior to a metal detector search being conducted, a sign or signs announcing a search for weapons shall be posted, on the day of the metal detector search, outside the school or school-related function, at a main entrance or entrances.

- C. When a metal detector is being used, students, staff members and visitors will be permitted to use only designated entrances to the school or school-related function. Corporation staff may be stationed at other entrances, as necessary, to prevent students, staff members and visitors from opening those entrances to admit others into the building or school-related function.

- D. All students, staff members and visitors entering the school or school-related function are subject to search although those conducting the search and/or monitoring the search may choose to limit the search by any lawful random formula. For example, if the lines become too long, the search may be limited to every second or third person. Once a random formula is utilized, it shall be applied without deviation until it is ended by order of the principal. A random formula shall not be ended to ensure the search of a particular student or person.

- E. The police and principal are prohibited from selecting a particular student and/or person to search unless there is a reasonable suspicion to believe that the student and/or person is in possession of a weapon.

- F. Prior to use in conducting an electronic search pursuant to these guidelines, each electronic search device to be used shall be examined by a person familiar with their operation to determine if they are in proper working order. An electronic search device shall not be used if there is any question as to whether it is in proper working order.

- G. Each person operating an electronic search device shall be trained in the proper use of the device and the detection of any malfunction in the operation of the instrument. Adjustments in the settings of the device shall only be made by local police or school administrators.

- H. As to each individual search, the police/principal will ask the student and/or person to remove all metal objects from his/her person and to place the metal objects and any bags, backpacks, briefcases, knapsacks, purses, or parcels on a table. With the exception of contraband in plain view, police officers may not inspect items in which a weapon could not be concealed, and may not examine written materials. The principal shall monitor each electronic search for compliance with these guidelines.

- I. The student and/or person will then be asked to walk through the magnetometer (i.e., walk-through metal detector). If the metal detector activates, s/he will be asked a second time to remove metal objects from his/her person and to walk-through the magnetometer a second time.

- J. If the walk-through metal detector activates a second time, the principal is to approach the student and/or person and explain the hand-held scanning device process, and then conduct a scanning beginning at the toes and continuing up to the head without intentionally touching the body. The bags and parcels will also be scanned. The principal shall monitor each electronic search for compliance with these guidelines.

- K. When a student's, staff member's and/or visitor's bag or parcel activates the scanning device, the principal is to request him/her to open the container in question so that the officer can look for weapons.

- L. If a student's, staff member's and/or visitor's body activates the device, the police will repeat the request to remove metal objects. A second hand-held scanning device scan will then be conducted and if the device is activated again, the principal will escort the student and/or person to a private area where a more thorough search will be conducted in accord with Administrative Guideline 5771 on searches of a student's body.

- M. Prior to the private search, the principal must ask the student, staff member and/or visitor again to remove all objects from his/her person, then the search will begin near the place where the device was activated. This is a pat-down search of outer clothing only, conducted by a person of the same gender, geared to locate the item which triggered the scanning device. The principal shall monitor this search for compliance with these guidelines.

- N. If the principal feels an object during the pat-down, the student, staff member and/or visitor will be given a chance to remove it before the police does. If such an object, once removed, appears to be the one which activated the device, the search ceases.

- O. The search can be continued only if a subsequent scan activates the device.

- P. The search is directed to a search for weapons, however, other contraband discovered in the course of an electronic search or pat down may also be removed from any student.

- Q. All property removed from the student as a result of the above procedures which may be legitimately brought on school premises or to school functions will be returned to the student. All other property will not be returned to the student.
- R. Property removed from the student or the student's bags or parcels, possession of which is a violation of the Code of Conduct school rules, Board policy and administrative guidelines, and/or the law, shall cause a student to be disciplined in accordance with the Code of Conduct and may subject the student to criminal prosecution and/or juvenile proceedings for violations of law.
- S. If student refuses to cooperate with the pat down search, the local police is to notify the principal, administrator, or Corporation staff member who is stationed nearby to monitor the search. Such students shall be subject to the Code of Conduct. Refusal shall also be grounds for immediate removal from school, facilities, and/or grounds and further discipline.
- T. Nothing in the procedures set forth above shall limit the authority of the Corporation and Corporation staff to remove other contraband from a student, and to otherwise search a student when there is reasonable suspicion to believe that a particular student is in possession of an article or thing, the possession of which constitutes inappropriate behavior under the Code of Conduct.
- U. A copy of the Metal Detector Search Procedures shall be available to each person and the principal who will in any way be involved with the conducting and/or monitoring of searches.

Q & A's?

7440A - QUESTIONS ON THE USE OF METAL DETECTORS (from Jay County Schools)

- A. When will metal detectors be used in the schools?

We have no plans to continuously use metal detectors in the schools. Rather, we intend to use them at random times throughout the school year in order to provide a deterrent. We will also use them if we have received or have knowledge of a threat to the school.

- B. Will metal detectors be used in the elementary, middle, and high schools?

Based on our knowledge of previous incidents around the state and nation involving weapons in schools, we are prepared to use them at the middle and high school level.

- C. Why does the Board of Education want a policy permitting the use of metal detectors in high schools and middle schools?

Given the increase in active school shootings in our society and the input of teachers, students, parents and the community, the Board feels this is a responsible step.

- D. What type of metal detectors will be used under the proposed program?

Walk-by metal detector (primary) with hand-held metal detection wands (secondary). For more information see this link: <https://ballistiglass.com/ballistiscan/>

- E. Who will conduct the metal detector searches?

School officials and law enforcement officers.

F. When will metal detector searches be performed?

On a random basis or in response to a threat to the school.

G. Will students or their parents be informed in advance regarding the specific dates on which metal detector searches will occur?

No. This would counter the deterrent effect of this policy.

H. What will be the duration of the program?

Until the threat of school shootings incidents are no longer prevalent in our society.

I. Has this type of program been used in other corporations in the State?

It is unknown how many districts have employed similar programs. However, all school districts were provided the opportunity to obtain free metal detection wands from the State of Indiana. 94% of Indiana school districts ordered these devices. See this link for more information:

<https://www.indystar.com/story/news/education/2018/07/23/metal-detector-wands-requested-almost-every-indiana-school-district/821052002/>

J. What is the cost of this program?

State-provided metal detection wands were free to schools. The walk-by metal detection system cost approximately \$4000 and is covered by the State School Safety Grant.

“The BallistiScan has met our needs and exceeded expectations. We needed a solution to prevent or deter weapons from entering our schools. At the same time, we wanted a technology that is effective, discrete, mobile and affordable. After a successful test at our high school, we decided to buy enough units to cover our entrances. This technology reduces anxiety for students by the simplicity of its design and it is easy to use by our existing school staff and School Resource Officer. The use of this technology has been broadly supported by our community. We are pleased with the results and see BallistiScan as an effective and efficient addition to our comprehensive school safety efforts.”

Jeremy Gulley
Superintendent Jay Schools, Indiana
Jay School Corporation

Thank You

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