Protecting Our Most Valuable Assets Our Students

The University of Pennsylvania
A Case Study

By Carl Clopton

U of Penn, like many academic institutions across the country, faces the ever-growing challenge of dormitory security and access control. Who is coming in? Are they authorized? Could they be a potential threat to the students? How do I maximize throughput during peak times AND increase my security level? These are questions every campus security manager should have answers to.

Student safety is the number one concern when considering dorm security. Students and parents need the peace of mind that only comes when every person entering the dorms can be identified and screened. Typically, this would be a slow, tedious, and expensive process employing a large guard force to verify the identities of all who enter. Alternatively, card access systems can be utilized; however, tailgating has proven to be problematic as students invariably allow unauthorized friends to enter, not to mention the 'would be' attacker or thief who patiently awaits an opportunity to slip through a closing door.

Prior to dormitory security upgrades, U of Penn utilized mechanical turnstiles with one lane in / one lane out and a security officer post at each dorm entrance.

The entry process required that a student approach the officer and present an ID card. The guard would then match the photo to the face, swipe the card through a card reader, and allow the person entry — a seemingly simple process, however, not ideal for high volume throughput.

With this system in place, a tremendous amount of traffic lined up at the doors of the four twenty-five-story, high-rise dormitories on U of Penn's campus as students gathered for security screenings. The challenge became eliminating large queues of students standing outside the dorms for twenty minutes or more, and sometimes in inclement weather, yet increasing the security level and throughput.

Security Services & Technologies (SST) began working with U of Penn in 2000, and as Area Manager Remo Patitucci describes it, "We started looking into optical turnstiles with barrier arms three years ago. We had a few manufacturers bring their products to U of Penn and set them up for beta testing and we put them through the ringer."

Among the turnstiles tested were Fastlane, from Smarter Security, ACS, and Designed Security Inc. (DSI). U of Penn ultimately chose the DSI ES831 series to protect the entrances of nine of their thirteen dormitories.

Several factors contributed to this decision including the look and aesthetic appeal, the fast action barrier arm which allowed the quickest throughput, and the fact that the DSI ES831 was the most secure from a sensor standpoint. "Our comparison tests proved the optical array on the ES831 alarms quicker than its competition," says Patitucci. The other systems tested required a person to be further into the lane before an alarm was generated.

In addition, DSI provides customized features such as a locking barrier arm. "Since we have set the lanes up in the ingress path, rather than in a path of egress; we can have a locking barrier arm and still meet all fire/life safety codes," Patitucci explains.

In process, when an unauthorized person enters the unsecured side of the lane, the alarm sensor detects the person. An audible alarm sounds, and the barrier arm is locked into place so that a person cannot force his/her way through the lane. A security officer then directs the student or visitor out of the lane. The officer resets the lane and then guides the person through the proper procedure while the flow of traffic continues with minimal interruption.

"The three lanes into each of our high-rise building dorm entrances will process a few thousand students several times a day – a constant flow of traffic. On the weekends we have a massive rush on the dorms around 2:30 a.m. as the nightclubs close!" Patitucci explains.

These high-security turnstiles utilize card readers and keypads to allow for a dual-technology entry system. The first step is to swipe the access card. Then a unique, four-digit code is entered. The card reader/keypad is tied into the university's access control system. In addition, two CCTV cameras with opposing views are aimed at each lane, and all camera video is recorded 24/7. In the event of an alarm, the associated camera frame rate increases.

"We presented U of Penn with several finish options, and they selected a solid stainless steel finish. They elected not to go with the Corian® top; once in a while we get students who ride their bicycles in the building and smack into them!" says Patitucci. "Students use these large tubs during move in and the turnstiles take some pretty good hits. So far we haven't had to replace any of the DSI turnstile stainless steel panels," he explains. "In the rare occasion we have had a service issue; DSI has promptly sent someone from their factory to take care of it."

"Many of U of Penn's buildings are historical, one hundred year old buildings; DSI gave us the most flexibility on the size of the turnstiles. Some of the other manufacturer's turnstiles are much longer and wider and physically would not fit in the building lobbies. Also, some manufacturers would only customize the color of the Corian® top; but DSI gave us the options to customize the entire turnstile," says Patitucci.

Bill Campbell of Access Management Solutions, manufacturer's rep for DSI, says "The ability of DSI to customize based on the specific needs of the customer make them really stand apart from their competition."

Highlights of the DSI ES831 for Dormitory Security:

1. At least double the security level of any dorm. Any college or university will tell you that their biggest concern is protecting their most valuable asset – their students. As a general rule, students will try anything they can to circumvent your security system to get people into the dorms that don't belong there. The DSI product virtually eliminates this problem.

2. Dramatically increase throughput. During peak times, you can have large numbers of students gathering trying to get through a security checkpoint; it can get a bit rowdy. This is not a good time for long delays. DSI turnstiles make this a non issue.

Penn, being such a large institution, has always been on the forefront of security. There have been many other colleges and universities tour the facilities, as many as two per month, and specifically to see dorm security. According to Patitucci, "SST was recently awarded a project for John Hopkins University.

There were a couple of custom modifications U of Penn requested for added security and to increase the area of detection: If you don't have a valid card read prior to entry within six inches to a foot into the lane, the first array is activated and the lane will alarm immediately. "The only way anyone unauthorized could pass through it without causing an alarm would be to jump on top and run across!" Campbell says.

In addition, the locking arm was a custom modification for U of Penn. The arm is normally extended, but unlocked, and retracts only on a valid card read. Interestingly, while the arm is normally extended, the locking mechanism remains disengaged unless the first array picks up an unauthorized entry. If you hit the array without a valid card read, this fires the solenoid into the locking mechanism. You can easily push the arm open on loss of power or a fire alarm condition.

Turnstile Layout and Operation:

When a person approaches, a red LCD light on the front of the turnstile reads "STOP." The card reader also has an LCD screen that reads "STOP." Once a person swipes their card, a green flashing arrow appears in the direction of the lane indicating that a person is allowed to enter.

There are two sensor arrays at the front of the turnstile that detect a person as they enter the lane. There is also a crawl sensor array just a few inches off the ground in the middle of the turnstile. If someone was to crawl under the first set of sensor arrays, they would be picked up by the crawl sensor array. There are a total of five sensor arrays throughout the lane, and they must all be tripped in a sequential order to avoid an alarm condition.

U of Penn was given the prestigious Jeanne Clery Campus Safety Award for their security upgrades. The award, established in 1994, is presented each year by Howard & Connie Clery to honor schools and individuals that have done extraordinary things to make college and university students safer.

“We have a lot of parents to answer to, and installing the DSI turnstiles has been the most secure method we have found to keep students safe and security incidents to a minimum. Safety is the first and foremost goal for Campus Security. Dedicated to ensuring the safety of students, DSI is willing and ready to partner with college security programs for a customized solution to fit your needs.” proclaims Patitucci.

SST is North America’s Premier Systems Integrator with eighteen offices throughout the United States and Canada. They specialize in the quality design, installation, training and service of Access Control, Biometrics, CCTV, Photo-ID Badging, Intrusion Detection Systems, and Network Communication Systems. As a GSA Schedule 84 Contractor, SST can provide a “Total Security Solution” for all federal government agencies. www.1sst.com

The University of Pennsylvania is a historic, Ivy League school with highly selective admissions and a history of innovation in interdisciplinary education and scholarship. Amidst a dynamic city and a world-class research institution, Penn's picturesque campus with its green lawns and landmark architecture is situated near the heart of Philadelphia. Students and faculty enjoy both campus life and the expansive cultural offerings of the city. www.upenn.edu

Since 1982, Designed Security, Inc., a subsidiary of the DETEX Corporation, has engineered and manufactured security and access control products for the corporate, commercial, government, and industrial marketplace. Standard and custom products are manufactured and shipped from a 13,000 square foot facility in Bastrop, Texas. Total command of fabrication and in-house testing allows for greater product quality, reduced lead-time, and improved customer service. This also provides for cost-effective, limited production runs of products that require custom modification to meet specific project requirements.

The DSI business philosophy is to provide customers with comprehensive engineering and technical support for all products. Effective communication and technical assistance during product evaluation and after the sale has contributed to product acceptance, enhancements, and a reputation for overall customer satisfaction. DSI security products are marketed, distributed, and supported by a National and International Security System Integrator Network. www.dsigo.com

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