ACCESS CONTROL & SECURITY SYSTEMS

Safeguards on the Rise

Jul 8, 2006 12:00 PM
By Michael Fickes

The arrest of seven men allegedly plotting to bomb the Sears Tower in Chicago and the FBI building in Miami has re-focused the nation's attention on the threat of terrorist attacks on iconic urban skyscrapers.

What high-rise buildings are at risk? The Sears Tower, an American icon, always appears on a short list of potential targets. So do buildings that house law enforcement groups such as the FBI.

According to emporis.com, a Web site that tracks high-rise buildings around the world, North America has 26,000 high-rise buildings (defined as at least 12 stories tall [about 115 ft.]). Which ones need protection? In the United States, the top three high-rise cities are New York City, with 5,496 high-rises; Chicago with 1,049; and Los Angeles with 467. Each city contains many potential targets. Certainly many other cities in Canada, the United States and Mexico contain targets that terrorists might consider. So which buildings need protecting?

Geography seems important in assessing risks. The northeastern cities and Los Angeles and San Francisco on the west coast might draw more attention from terrorists than cities in the Midwest. Then again, Timothy McVeigh built a truck bomb and blew up the Alfred P. Murrah Federal Building in Oklahoma City. International terrorists might know more about cities with international profiles like Toronto, Boston and Dallas. But what if a homegrown terrorist has a grudge against the state police in Montana?

Perhaps a spectacular building with high-profile tenants would make a good target? Those buildings then create risks for adjacent buildings that may be vulnerable to collateral damage. What about buildings near subway or train stations?

What kind of business is conducted in the building? Financial businesses make likely targets. Then there are the great retail centers where thousands of people gather every day.

Clearly, many high-rise buildings can attract the attention of terrorists looking for symbols. But different buildings face different risks, have different vulnerabilities and need different levels and kinds of protection.

To learn how people and technology are protecting high-rise buildings against the threat of terrorism, fire and crime today, *Access Control and Security Systems* asked several consultants, integrators and technology manufacturers to describe some of the techniques they have employed to solve security challenges of downtown high-rise buildings.

Vulnerability and threat assessments

“Once we understand a facility, its occupants and the potential for an attack, we can determine a level of threat to be concerned about,” says Jim Francis, CPP, CFSO, senior vice president and chief operating officer of Aggleton and Associates, a security consulting firm based in Tarrytown, N.Y. “Then we develop a plan for securing the building. We start outside at the perimeter and move into the higher-value resources in the body of the building, applying security in ever-increasing levels as we approach the most critical assets.”

Perimeter security

“New York City has set a standard for using bollards to protect building perimeters,” says Jeremy Brecher, director of IT and support services in the enterprise security systems group of Diebold Inc., North Canton, Ohio. “An underground metal frame connects all the bollards, which are set close enough together to prevent a vehicle from slamming into the building. They are set about 8 feet from the

building, on the outside of the sidewalk.

Stationary bollards are used around the sides of buildings, continues Brecher. At the building's doors, parking entrances and loading dock, they are controlled by hydraulic mechanisms. If there is a panic — say a judge pushes a panic button in his chambers — he can automatically cause the building security technology to switch to a more secure mode. Under this scenario, the bollards guarding the entrances would slide up and lock into place.

Francis adds that exterior surveillance cameras might be used to monitor events outside the building. He also recommends installing door contact alarms on perimeter doors. “Be sure to examine all window treatments, low to high,” he says. “If you are in an area with a strong potential for terrorist bombing you must be concerned with (shattered glass).”

Lobby security

High-rise city buildings dealing with virtually any level of threat today use turnstiles to control traffic moving through the lobby to the elevators. “I don't remember the last time we did a building without turnstiles,” Brecher says. “And we're doing tons of surveillance, including intelligent video.”

Intelligent video systems are finding numerous applications in high-rise security and safety, according to Steve Birkmeier, vice president and director of marketing with St. Louis-based Arteco Vision Systems Inc. “Our system can search for things like anomalous vehicles, loiterers or abandoned packages,” he says. “Another application that has become important is counting. The system can count the people that enter and leave the building. In a fire, you can have a ready count of the number of people still in the building.”

Visitor systems

“Before Sept. 11, you would come into a building and encounter moderate security,” Brecher says. “Specific security needs, if any, were handled at the floor level by tenants. Today, base buildings are all putting in turnstiles at the front door, and you need a credential to come through.”

Most visitor management systems today operate with a Web connection that enables employees to pre-register their visitors so that a security officer can print up credentials before the visitor arrives. Upon arriving, the visitor shows a driver's license, which may be scanned through a verification machine designed to make sure it has not been counterfeited.

Some systems tie into databases that identify people prohibited from entering the building: a violent spouse, former partner or former employee with a grudge.

Duress systems

Depending on the building, a lobby open to the public may cause concern. Suppose someone enters the lobby of such a building and makes a threat? Francis says that duress systems can prevent elevators from stopping at and moving off of the lobby floor with the press of a button.

Hoteling

Francis also describes a system developed for a consulting company that used a concept called hoteling. Since a large number of the firm's consultants traveled weekly, it was possible for each to share his or her office and reduce the company's overall needs for office space. While this has been done in the past, it has always been a little clunky. Shouldn't a consultant have his or her own office telephone number? What about moving corporate LAN privileges from one office to another? For this client, Aggleton designed a system in which the access control system would inform consultants which office to use when they carded-in each morning and then reconfigure phone numbers and computer permissions as required.

Optimizing elevator operations

“One client asked us to develop a system with optical turnstiles, in which the building's tenants presented proximity credentials at the turnstiles,” says Francis. “When the turnstile opened, a display panel would direct the person to the appropriate elevator. It not only helped control access in the lobby and the elevators, it also optimized the operation of the elevators.”

Older high rises can add elevator access control with wireless technology, says Lester LaPierre, marketing manager with Ingersoll Rand's Schlage Wireless Access group in Chicago. “Traveling cables are often ill-equipped to transport credential data from the cab to the elevator controller,” he says. “Elevator shafts are harsh electrical environments and are often the source of data corrupting noise that

affects the card reader data lines. This causes inconsistent performance."

But wireless solutions can eliminate the need for the data lines in elevators up to 1,000 feet, LaPierre continues. When it comes to costs, cable installations range from $2,600 to $13,000 or more per cab. Wireless alternatives cut those costs substantially.

Wireless communications

Washington, DC-based Akridge is installing one of the nation's first neutral host in-building wireless systems in the Homer Building, a multi-tenant commercial office building and Washington, D.C., landmark. Provided by MobileAccess Networks of Vienna, Va., the in-building wireless system will support all wireless devices including cell phones, pagers, PDAs, two-way radios, WiFi, building automation systems and — perhaps most importantly for security — emergency communications frequencies.

According to a statement prepared by Akridge officials, the system will produce a return on investment in the form of client retention and lease renewals, thanks to the increased customer service and safety.

The parking garage

Security equipment for parking garages in high-rise buildings ranges from tire-puncturing devices to simple swing arm gates to pop-up crash barriers built into the roadway, says David Dickinson, senior vice president with Valencia, Calif.-based Delta Scientific, a firm that specializes in vehicle access control.

Regardless of the type of vehicle control system installed in a garage, Dickinson advises that any entrance to a parking garage or lot must not provide a long straightaway ramp or driveway that allows vehicles to pick up speed before arriving at the access point. "Forcing vehicles to slow down by creating an S curve just before the entrance automatically creates a more secure environment," he says.

The Arteco intelligent video system can help to monitor goings-on in the garage, too, while also counting vehicles that enter and leave the facility. At any given time, the system can report how many motorcycles, SUVs and compact cars are in the garage.

Higher security buildings, according to Francis, sometimes switch to all valet parking and even inspect all vehicles coming into the garage — by popping the trunk and hood and looking at the undercarriage.

The loading dock

"One of the biggest problems we see while doing security assessments is well-protected building lobbies combined with wide-open back doors," says Francis. "I have lost count of the so-called secure buildings that I have entered from the loading dock."

In addition to surveillance cameras, Francis suggests looking into vendor management systems. "With these systems, the standard vendors for a given facility can pre-register and receive a unique access device that manages their trips to the building," he says. "With these systems you can also require background checks on all individuals that will have access to your building."

In many cases, background checks are already written into contracts with vendors, notes Francis, but in practice, enforcement remains lax.

Biometric access control

Aspirus Wausau Hospital in Wausau, Wis., today uses 50 Schlage Recognition Systems biometric hand readers to ensure that only authorized individuals have access to the hospital grounds. More than 3,000 hospital employees are enrolled with the hand readers, which take about a second to identify and admit an individual. "We chose biometrics because of the high cost of using access control cards," says Greg Pehlke, security supervisor for the hospital. "We were spending $2,000 a month on smart cards with computer chips, which employees were simply loaning to unauthorized individuals. Much of this cost and the security breaches have been eliminated with the hand readers."

The hospital's previous card-based system had reached full capacity and would frequently freeze up.

RFID

New security approaches continue to appear in the nation's high-rise buildings. In Los Angeles, for example, an 18-story high-rise condominium building occupied by high-net-worth individuals employs a radio frequency identification (RFID) system in combination with surveillance cameras to secure the parking garage. The system replaces cards.

When a vehicle approaches the garage entrance, it stops at the gate. An RFID transponder in the vehicle communicates with the garage RFID system, which determines if this RFID tag belongs to the garage or not. At the same time, a sensitive surveillance camera reads the license plate on the car and uses optical recognition software to compare the tag with a list of tags cleared to enter the garage. “Finally a third camera focuses on the people in the vehicle,” says Scott Jenkins, CPP, CSS, CEO of Jentek Integrated Systems in Walnut Creek, Calif. “And a security guard identifies the people. All of this information must match before the gate is released.”

Once inside the parking garage, RFID sensors on the walls can track vehicles and record their positions. Mike Garcia, chief marketing officer with San Antonio-based MDI Security Systems, which supplied the technology, notes that this is a particularly useful technique for delivery trucks. “When vendors enter the garage, they are given a certain route,” he says. “If they deviate from the route, an alert comes up on the security console and officers will investigate.”

And there is more technology on the way, says Garcia. “Facial recognition is coming to the forefront,” he says. “And there is a lot of talk about MDI's virtual fence technology for high-rise and parking garage applications. With this technology, you create a virtual perimeter with two cameras with site lines that cut across each other. This enables you to calculate a 3D triangulation. You can wrap an electronic sheet or fence around a car, and when that fence is breached it sets off an alarm.”

These are among the techniques that remain in the future of high-rise security. But there are literally dozens of techniques and technologies that can be mixed and matched to construct an effective security system today.

Where are the High-Rises?

U.S. Cities With the Most Skyscapers

This listing shows North America's most active cities in terms of building activity on completed high-rise buildings, defined as buildings with 12 or more stories.

New York

Population: 8,143,197
Buildings: 5,497

Chicago

Population: 2,842,518
Buildings: 1,049

Los Angeles

Population: 3,844,829
Buildings: 467

Honolulu

Population: 377,379
Buildings: 425

San Francisco

Population: 739,426
Buildings: 398

Philadelphia

Population: 1,463,281
Buildings: 340

Houston

Population: 2,016,582
Buildings: 331

Washington

Population: 553,523
Buildings: 279

Boston

Population: 559,034
Buildings: 256

Dallas

Population: 1,213,825
Buildings: 237

Miami

Population: 386,417
Buildings: 209

Arlington, Va.

Population: 195,965
Buildings: 206

Atlanta

Population: 470,688
Buildings: 203

Seattle

Population: 573,911
Buildings: 185

Minneapolis

Population: 372,811
Buildings: 185

Denver

Population: 557,917
Buildings: 181

Detroit

Population: 886,671
Buildings: 177

Baltimore

Population: 635,815
Buildings: 154

Pittsburgh

Population: 316,718
Buildings: 151

St. Louis

Population: 352,572
Buildings: 148

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