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*"They said they could deliver in the timeframe we needed to complete the access control upgrade."*

Carlos Villarreal  
Director of Security, Sears Tower



## Sears Tower: Johnson Controls' Towering Integration



The effects of 9/11 continue to impact businesses across the country, as security upgrades are being done in

buildings large and small. But right after the terrorist attacks, major landmark locations like the Sears Tower, the tallest building in the United States for 30 years, had to be additionally secured as soon as possible.

Johnson Controls' Hillside, Ill., office was awarded the job of installing security hardware, and it won the bid (out of seven vendors) for the access control upgrade. Johnson Controls upgraded the building's access control system with a Web-based visitor registration system with ID badging, and added CCTV cameras



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to its digital recording system. It also installed optical portal units, X-ray metal detectors and protective barrier systems. The large-scale project earned the integrator Security Sales & Integrations' Sales and Marketing (SAMMYs) Awards' grand prize of Integrated Commercial Installation of the Year for 2003.

### After 9/11, Tower is Considered a Major Threat

A day after the attacks, building officials and security consultants began a comprehensive security assessment. They ultimately decided to upgrade the building's access control system and install different forms of security hardware.

The goal of the project was to secure the core of the building and sustain a safe and secure work environment for the tenants. "It was an issue of population control," says Mark Eggerding, senior technical solutions representative Johnson Controls. The integrator has been providing the Sears Tower all of its building automation and security needs since 1983.

Carlos Villarreal of Trizec properties, director of security for the Sears Tower, says the building population alone is approximately 10,200, with up to 20,000 people entering the skyscraper on a daily basis. "We didn't have any threats on the building, but it was considered to be a potential target," says Villarreal.

During the bidding process, Villarreal says Trizec received proposals from six other providers, but Johnson Controls came in with a good design and competitive pricing. More importantly, he adds, "they said they

could deliver in the timeframe we needed to complete the access control upgrade."

### Company Begins With Hardware to Enhance Population Control

The first phase of the project began in December 2001. It consisted of installing X-ray metal detectors and optical portals on the first floor in the lobby area. "While doing this, the building still had 20,000 people coming into the building," Eggerding says. "So we had to keep the existing access control system running while doing flow control pathways to provide the least amount of distribution to the place as possible."

With six to seven installers on the job, Johnson Controls started with the optical turnstiles in 34 locations throughout the lobby area. The installation crew anchored the turnstiles to the floor and ran wire to integrate them into the access control system, which was to be upgraded later to meet a June 3, 2002 deadline.

The turnstiles are made of stainless steel to match the building's décor and have glass doors. People who pass through the turnstiles must first present their access control card. Optical sensors then determine where each person is allowed to go.

The next step was to install the X-ray equipment, which was integrated with the [American Dynamics] CCTV system. This initial process posed a challenge for Johnson Controls, Eggerding says, because of the conduits in the floor. The crew built additional glass walls for service door applications.



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## New System Backbone Enables Better Integration Flexibility

Once the X-ray equipment portion had been completed, Johnson Controls installed a new network backbone with fiber optics and hardwiring for door and elevator control. Door hardware was added to many locations on the first floor – as well as other floors – but the company kept the hardware that had already been installed on some doors.

“This new system provides more flexibility for the elevators,” Eggerding says.

Next up was installing additional CCTV cameras from American Dynamics. Johnson Controls added dozens of cameras on the first floor – consisting of a combination of high-definition black and white (B&W) cameras and some color cameras.

The cameras were linked to the Sears Tower’s CCTV system, made up of 10 [Intellex] digital



video recorders networked together in the building’s main control room. “The integrated system allows the cameras to have direct integration with the access control

portion. It can give signals back to the CCTV system to change location or to begin recording,” explains Eggerding.

## Building Floor Access Controlled Through Elevators

After June 3, Johnson Controls worked its way up to other floors, mounting new equipment on top of elevators for access. This was an intricate process since each floor would act

as a door location, Eggerding says. CCTV cameras were also installed on certain floors, such as the building’s sky lobby floors, which is a transfer floor to the elevators.

Johnson Controls also installed outdoor barrier protection, but Eggerding and Villarreal could not elaborate further, citing security reasons.

## Crew Transfers Information of 20K Tenants Into New Access System

Johnson Controls worked on the access control upgrade in March 2002, right after the integrator was awarded the bid. It created a new access control database and transferred all of the information from the previous system.

The integrator worked with the building’s operation and security team on this portion. “We had 24,000 people who had their pictures taken, so we had to find a way to convert those people into the new system without having to take pictures again,” Eggerding says. The daunting task was done in three months, making the June 3 deadline.

The fire portion of the security system was not worked on much, Eggerding says, only that it was integrated with what Johnson Control had installed. The work consisted of hardwiring the smoke, heat and other fire protection outputs to the access control panels (mandated by code), then wiring them to the optical portals. “We monitor more than 30,000 points on the fire portion alone,” says Eggerding.

## Providing Service to Sears Tower Is an Ongoing Process

Throughout this process, Villarreal, Eggerding and others held weekly meetings and communicated with each other about three times per week. “We would meet with Mark,



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electricians and carpenters and go over blueprints,” Villarreal says. “Then we would repeat the process and go forward.”

It’s been more than a year since Johnson Controls installed this equipment. Eggerding says the company continues to upgrade and install security equipment to the complex system. “We’re adding a new addressable PA system throughout the building. We’re continuously upgrading to keep current with codes and with the building’s changing needs.”

So far, it has cost Trizec Properties millions for the project – and counting. Eggerding says “We have an obligation to the building. It’s a partnership with Trizec, so we’re very cognizant of cost and service.”

Villarreal, who has been security director of the Sears Tower since 1997, says Trizec is satisfied with the work and service Johnson Controls has provided. “We’re fortunate to have technicians on-site and have a phone tree system so we can have someone available on off-hours,” Villarreal affirms. □

## System Summary

*Project:*  
**Sears Tower**

*Location:*  
**Chicago, Illinois**

*Products:*  
**Cameras and Intellex**

**tyco** / Fire & Security