

Project Profile New York City Station



ALL ABOARD: NOTIFIER PROTECTS ONE OF WORLD'S BUSIEST TRAIN STATIONS

It took a full two years to commission a massive network of three NOTIFIER NFS2-3030 ONYX Series fire alarm control panels, 53 subpanels and more than 2,600 devices throughout 550 rooms, tunnels and platforms within one of the world's busiest commuter hubs. In addition to sprinkler monitoring, the system integrates with a number of ancillary building systems to perform code-required controls of escalators and elevators, plus fans for smoke control. Thanks to some savvy engineering and state-of-the-art technology, this 50-year-old, New York City train station is now outfitted with a single, integrated fire alarm and emergency communications system.

 **NOTIFIER[®]**
by Honeywell

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INSTALLATION & CONTROL

A major challenge was the execution of this momentous installation without disruption to the station's daily 20-hour train service and the more than 250,000 people that pass through every day.

"Basically, we only had four-hour windows in the middle of the night where we could work trackside when the trains were not present," relates Bob Farm, sales engineer, United Fire Protection Corp. (UFP), the Kenilworth, NJ-based NOTIFIER distributor that provided and installed the major systems on the project.

Incorporating the owner's requirements for a proven system, offering multiple layers of flexibility and an easy means of monitoring and control, Code Consultants designed the system as an open specification, which was put out to bid.

"The electrical contractor and United Fire's team, along with their plan to complete the project, was what really sold the job," explains the system designer, William J. Aaron, Jr., senior project manager with Code Consultants in St. Louis. "In addition, NOTIFIER had the support system to get the equipment to the distributor (UFP) on time, and to provide help in the field when it was needed."

Using a combination of fiber optic and copper wire for networking, UFP went with Class A, Style 7 circuitry, which provided a high level of survivability. "Because we were able to install subsystems and amplifiers throughout the facility, we were able to keep home run wiring to a minimum," notes Farm.

According to the station's Engineering Fire and Life Safety Project Manager, "This system's ability to network multiple panels that distribute the power and control capabilities throughout the station, enabled us to protect a very large facility, with a myriad of conditions, to operate as one overall system."

The entire fire alarm and emergency communications system is monitored and controlled from three different command centers - two onsite and one in another state. Staffed 24/7, each command center comprises a digital voice command panel (DVC), used to monitor the entire fire alarm network. The DVCs are equipped with a microphone and programmed to allow users to broadcast live voice announcements and temporal evacuation tones through the facility's hundreds of speakers or to any of its five notification zones.

To heighten monitoring and control of the network, the primary onsite fire command station is also equipped with a NOTIFIER ONYXWorks graphic workstation, providing floor-by-floor views of the entire facility and its major fire alarm and emergency communications system components. Through simple virtual switches programmed to perform a number of functions, ONYXWorks can control fans and other major network components. For example, specific smoke detector zones can be temporarily shut down for maintenance or when welding is taking place within a particular area.

Given the variety of environments and ambient noise commonly present throughout the station, the audio quality of announcements had to be highly-intelligible. Farm refers to this system's audio as being "of CD quality." Similarly, the visual notification had to be ADA-compliant.

Whether signaling a possible fire or highlighting the importance of emergency notifications, the system's strobes can be used for both fire alarm and mass notification events.

"The day we turned that system on, which required synchronizing more than 1,000 strobes, and saw the synchronized strobes flashing across all of the train platforms - that was quite an amazing sight," recalls Aaron.

In terms of going with one unified fire alarm and emergency communications system, the station's Engineering Fire and Life Safety Project Manager explains that it was really a no brainer due to cost savings, reduced power requirements and more effective operations.

With so many components and such complexity built into the system, the technology's modular flexibility enabled the team to bring parts of the system on-line as they were completed. "We had to build this thing in pieces and do the final hook-up in the end. That's what made the NOTIFIER technology great for this project because we could pre-test each component as we went along," explains Farm.

CREATIVE ENGINEERING

Conventional smoke and heat detection devices were installed in most of the terminal areas. However, areas presenting a challenge for detector installations included spaces comprising ceilings with too many obstructions, in high-voltage substations and on the train tracks themselves where overhead high-voltage catenary power lines could not be shut down.

Linear heat detection cable offered a great solution for utility rooms, while substations were fitted with beam detectors, serving to keep transmitters and receivers away from high-voltage equipment.

As for the train platforms, engineers had to get a little more creative. Considering the trains travel through environmental extremes without any means of separation, the facility had to be prepared for any emergency situation brought about by an incoming train, such as a fire.

"For that application, we used a technology used in Europe, but new to the United States, which is fiber-optic linear heat detection," explains Aaron. "To keep the electricians away from those overhead power lines on the tracks, we used fiberglass conduit because it's not conductive, as opposed to steel."

To integrate the train platforms' heat detection with the NOTIFIER system, the engineers established output contacts from the subpanels, and using monitoring modules, they sub-divided the outputs to be monitored through the central fire alarm panel.

Another important aspect of this fire alarm and emergency communications system was its ability to easily adapt to future changes and expansions.

"We were looking for a system that would not only cover the building now, but give its owners the flexibility that whatever happened in the future, we could incorporate more functionality into the system," explains Aaron.

Reflecting on the project that dominated two years of his life, Aaron recalls the thrill of turning on the entire system. "It was quite humbling to see a project of this scale perform exactly as it was designed."

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