Don’t Lock in Fire Code Violations

By Michael Minieri, CPP,

The increased focus on security over the past several years has sparked heated debate between security and fire-safety professionals. These conflicts occur because while security must prevent intruders from entering a facility, fire-safety professionals must ensure that occupants can exit quickly in an emergency. Security measures such as badging out and securing stairwells may raise fire-safety code concerns. But security professionals can take steps to minimize the potentially negative impact that some life-safety requirements might have on their security plans. Let’s look at how security and safety goals can be reconciled with regard to egress points, stairwells, and alarm response.

Egress points. Access control is the primary area of conflict between security and life-safety professionals. While locking outside doors to prevent people from entering a building is permissible under all of the published fire-code requirements, inhibiting free egress is not. The National Fire Protection Association’s (NFPA) Life Safety Code 101 says that in general every person within the building must be able to exit all doors in their path to the outside without “the use of a key, a tool, or special knowledge or effort for operation from the egress side” (NFPA 101, 7.2.1.5.2).

Most of the criteria addressing permissible access-control measures stipulate that door locks (from the egress side) have to be released upon events such as activation of the building fire-alarm or fire-sprinkler systems. Usually, the lock must remain open until the fire-protection system is reset.

The code recognizes, however, that smoke detectors are the usual source of false fire alarms. Understanding the weaknesses in these detectors, the code stipulates that an evacuation alarm can be programmed to sound only after more than one smoke detector, or a combination of a smoke detector and a manual pull station, sprinkler, or heat detector, is activated. Other systems, such as sprinklers and heat detectors, are much more reliable, and the code requires an evacuation alarm when only one of these alarms is activated.

_Panic hardware._ Where a company wants to have a badging-out system for tracking and other purposes, it will need a way to address fire-code demands for free egress in emergencies. Providing conventional panic hardware along with the access control equipment is a sufficient compromise between the code and the access control objective for some security applications.

Panic hardware allows occupants to push the door open without using a badge, but that action causes an alarm. The alarm could, for example, be linked to a CCTV camera that enables security staff to analyze the situation and document it for further review or disciplinary action.

There are two types of panic hardware: mechanical and electric. The appropriate choice varies by application. It is important, however, that all panic hardware is Underwriters Laboratories (UL) rated for use in a fire.
**Delayed opening.** In some circumstances, a company may want a way to have personnel respond to the scene before the door opens. This approach is critical for businesses, such as large retailers, that might be victimized by thieves running out of unmonitored exits with merchandise.

The fire code does allow for this type of arrangement, which basically is a panic-hardware setup with not only an alarm but also some delay before the door unlocks. But the code limits the time of the delay.

A 15-second delay is permitted without special permission from the compliance officials; however, a 30-second maximum delay time can be granted to facilities on a case-by-case basis by local fire officials.

The code (NFPA 101, 7.2.1.6.1) also requires that a specific sign be clearly posted on the door, making the occupant aware of the delay.

**Stairwells.** In most jurisdictions, doors to stairways in buildings, of five stories or more, are required to remain unlocked during a fire to allow reentry from the stairwell if passage to the ground level is obstructed by fire, smoke, or debris. Unlocked stairway doors also allow firefighters access to the fire. Security professionals, however, often need to prevent occupants from using emergency stairs for uncontrolled travel between different floors on a daily basis.

An NFPA code allows stair doors to be locked from the stairway side if the locks will release upon fire-alarm activation (NFPA 101, 7.2.1.5.7 [2]). Thus, as with an external door, a card reader can be installed on the stairwell side of the door as long as it will be overridden when a fire alarm sounds.

This solution doesn’t eliminate the potential for evacuees to gain access to secured floors during false-alarm evacuations. Security professionals should take this fact into consideration when designing the system and should install equipment, such as CCTV cameras and alarms, in all sensitive areas.

Another option is to have a hallway or lobby area on each floor, such that stairwell doors do not open into any office space, but only onto the lobby or corridor. This is possible when two stair towers are both accessible from this one vestibule. The subsequent entry into the inner office space would be controlled by a card reader. In this scenario, the stairwell remains accessible, allowing the evacuee to escape one stairwell and enter another stairwell, but the evacuee is not permitted access to secured offices or other unauthorized areas.

**Alarm response.** False alarms can be costly for businesses as well as annoying for guests, tenants, and workers. They can also lead guards to become complacent. In some cases where security has the power to silence the fire alarm, officers who have endured multiple false alarms may be tempted to ignore the next alarm without checking it out. That could, of course, be a deadly mistake.

**Positive alarm sequence.** To prevent false alarms from being sounded to the occupants, the code allows for some buildings to be configured with a “pre-signal” feature (NFPA 72, 6.8.1.2), which allows for the
initial fire alarm signal to go first to a location monitored around the clock by trained personnel. Once the signal is received, the personnel must then manually initiate the general building evacuation signal.

As in all cases where human intervention overrides an automatic fire alarm, procedures must be in place to prevent failures to signal an evacuation in an actual emergency. These procedures are designed to avoid the dangers of complacency discussed earlier.

One code-permissible configuration is called a “positive alarm sequence” (NFPA 72, 6.8.1.3), a sort of pre-signal system combined with a “dead-man’s switch.” In this arrangement, the initial alarm signals only to trained personnel, who must manually acknowledge the signal within 15 seconds of activation. Failure to acknowledge the signal causes an automatic building evacuation.

Acknowledging the signal within the allotted 15 seconds then starts a three-minute “investigation” phase, which allows the source of the alarm to be confirmed by a guard, for example. If no problems are found, the general evacuation signal can be aborted within the three minutes. A failure to abort the signal causes an automatic building evacuation alarm.

The author used this type of sequencing at a client’s property. The more-than-300-room destination resort hotel was plagued by false alarms. The resort’s policy was to comp rooms for all false evacuations that occurred during sleeping hours. At an average of several hundred dollars per room per night, the cost of false alarms began to affect the hotel’s bottom line.

Although the hotel took steps to increase the reliability of the fire-alarm system, including the revamping of detectors and sprinkler systems, the results remained unacceptable.

To combat the problem, the author devised and recommended a modified positive-alarm-sequence concept. Under this plan, if an alarm is triggered, workers at the front desk are notified.

The front-desk workers have 15 seconds to acknowledge the alarm by simultaneously using their two different access control cards at two readers located at least ten feet apart. The readers and the cards are part of the access control system, creating a log of the individual workers who acknowledge the alarm. The access control system is integrated into the fire-alarm system.

If the alarm is acknowledged during the 15-second window, the evacuation alarm is delayed for three minutes, allowing security to investigate the building for signs of fire. If, however, the alarm is not acknowledged by the front-desk workers during this time, the evacuation alarm sounds, eliminating the investigation phase altogether.

During the investigation phase, a security officer investigates the area that triggered the initial alarm. The officer can abort the evacuation with his or her access card at predetermined abort stations, located in the vicinity of the smoke detectors and on opposite ends of the corridors. The abort stations were installed after consulting with local fire officials.
Aborting the alarm requires the officer to hold his or her card to a reader at one end of the hallway, then walk to the other end of the hallway and again hold the card up to the reader. Requiring the same badge to be used at both ends of a corridor helps ensure that someone traverses the entire hallway to see whether any evidence of smoke or fire exists.

If the alarm is not aborted in the allotted time, the evacuation signal sounds. As with the employees at the front desk, because the employee investigating the incident uses his or her personal badge to abort the alarm, a record is created in the access control system.

The investigating officer must complete the investigation within the three minutes. If the officer does not abort the alarm within the allotted time, the evacuation alarm will sound.

Additionally, as required under the code for a positive-alarm-sequence system, the evacuation alarm could be accelerated instantly by any second alarm signal or by the activation of any manual fire-alarm pull station. If the investigating employee discovers an actual fire, the evacuation signal can easily be initiated this way without waiting for the three minutes to expire.

This system, which the author dubbed an “Enhanced Positive-Alarm Sequence” (EPAS) configuration, was designed to help ensure that trained personnel would physically respond to the general area of the source signal, rather than simply aborting the evacuation from the front desk on the assumption that it was just another in the history of false alarms.

The response element, along with the “two-man rule” and the records generated by the access control system, were benefits intended to help thwart potential liability lawsuits. It also helped to reduce the amount of unnecessary evacuations during sleeping hours, eliminating the need for the hotel to comp guest rooms.

Addressing both life-safety and security is a difficult but essential task that requires knowledge of codes and their implications for the overall security plan. With the proper planning, security professionals can find creative ways to work with the fire codes and fire officials to create a win-win situation that ensures safety and security for all occupants.

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