



Means of Egress Maintenance and Security in Student Housing

By Gregory Harrington, P.E.

Over the years, fires in numerous types of occupancies have taught a hard lesson: when people are locked in a building and a fire occurs, people will die. It's that simple. One needs only to review the myriad fire investigation reports published by NFPA (available online at www.nfpa.org) and other organizations to see that free egress from buildings is a fundamental, necessary safeguard to assure occupant life safety from fire. A limited handful of occupancies, such as detention and correctional and some health care applications, are able to safely secure occupants against free egress because numerous alternative safeguards are provided; but the majority of occupancies, including those utilized for student housing, must be provided with free, unobstructed means of egress.

In the world of codes and standards, the term 'means of egress' refers to the way out of a building, and it is comprised of the entire path of travel from any point in the building to a safe location outside the building. Regulations for means of egress in the U.S. evolved following such historic fires as New York City's 1911 Triangle Shirtwaist factory fire in which 146 garment workers died, and Boston's 1942 Cocoanut Grove nightclub fire in which 492 people perished. In both fires, it was reported that locked exit doors contributed to the large numbers of fatalities. From these fires, codes such as the *Life Safety Code*®, also known as NFPA 101®, incorporated requirements for multiple means of egress from buildings to ensure that, in the event one is blocked by the fire, at least one additional means of egress will be available for use by occupants. In addition, the *Code* has incorporated requirements to maintain means of egress free and unobstructed for use by any and all occupants whenever the building is occupied.

Unfortunately, the concepts of means of egress and building security are polar opposites. In a student hous-

ing setting, there is a very legitimate security concern; crimes against students, such as thefts and assaults, occur more frequently than student fire deaths, which is a relatively rare event. It is understandable that security is a priority for the operators of student housing, whether such housing is a dormitory owned by a university, or a privately owned, off-campus fraternity or sorority house. Students have the right to feel secure where they live, but life safety from fire must not be entirely compromised in the name of security. A balance must be struck, and codes such as the *Life Safety Code* and NFPA 1, *Fire Code*, contain provisions to assure life safety from fire while maintaining security.

The ability of building occupants to leave the building at any time, without the use of a key, tool, special knowledge or effort, is a fundamental tenet of the *Code*. It prohibits arrangements where an occupant would, for example, be forced to swipe a key-card, hold a proximity card up to a sensor, or enter a pass-code on a keypad to unlock an egress door from the egress side of the door (that is, in the direction of egress travel). Note that the *Code* in no way prohibits the locking of egress doors from the ingress side, or the way into the building, as long as the door can be freely opened from the egress side. A traditional lock and latch mechanism achieves this requirement; the issue with a traditional lock and latch, from a security perspective, is there is no way to control who is opening the door from the egress side, or to prevent unauthorized individuals from entering the building when the door is opened. As a result, electronic door locking controls have proliferated in recent years.

A common door locking arrangement is one in which occupants must electronically "key-in" and also electronically "key-out" such that a record of whose card or access code is used to enter or leave the building at a given time. Such a system maintains a record of who

opened a door and at what time, and the inherent accountability serves as an incentive to occupants to prevent unauthorized entry. It is a common misconception that such arrangement is *Code* compliant provided the door automatically unlocks when the fire alarm activates - IT IS NOT. The *Code* does not permit dependence on the activation of a fire alarm to allow for free egress. Although modern fire alarm systems are reliable, they can be complex and too many potential failure modes exist that could lead to occupants being trapped in the building. There is a need for safe, alternative, electronic security arrangements; several are available.

To prevent unauthorized entry or egress via unmonitored "emergency exits," such as rarely used stairwell doors, the *Code* allows the use of delayed-egress locking systems. Doors equipped with delayed-egress locking systems are normally secured locked by an energized electromagnet. If an occupant depresses the releasing device on the egress side of the door (typically a push-bar or push-pad) briefly, the door remains securely shut and a momentary alarm sounds to serve as a deterrent to opening. If the releasing device is pushed and held for not more than 3 seconds, a continuous alarm sounds and a 15 second irreversible countdown starts, after which the door can be freely opened until the system is manually reset. As an added precaution, if the building's automatic sprinkler system or fire detection system activates (one such system is required to permit the use of delayed egress locks), the door immediately and automatically unlocks. Such systems have been recognized by the *Code* for nearly 30 years and have proven to be safe and reliable.

Where delayed egress locking systems are undesirable, for example at a main entrance/exit, doors can be equipped with card readers (or equivalent means) to unlock doors from the outside, and to control who opens a door from the egress side such that an alarm sounds when the door is opened by an unauthorized occupant without locking the door from the egress side. Such an arrangement can serve as an effective deterrent to unwanted entry where it is supplemented by closed-circuit television monitoring or alternative means to visually

identify who enters and leaves the building. From a fire safety perspective, such an arrangement in no way contains the building's occupants, and all occupants should have the ability to egress the building at all times.

In no case should a required means of egress door be secured in the closed position beyond the control of building occupants in an effort to enhance security. If the prospect of students dying in a fire because they are unable to escape due to security measures is not sufficient to convince student housing operators to verify that their egress facilities are up to code, the associated monetary liability and negative public relations of such a tragedy should be considered. Life safety from fire and security do not have to work against each other; they can complement each other with a bit of planning to allow students to enjoy a safe living environment - one that is safe from security threats, and one that is concurrently safe from fire.



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