# CAMPUS FIRE SAFETY CODE TALK

**Campus Fire Safety e-NewZone**

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FREE EGRESS BY OCCUPANTS IS A MUST
By Ron Coté, P.E., Principal Life Safety Engineer

The need to provide occupant and property security often competes with the need for assuring free egress by occupants of all types of buildings found on campus.

Door openings in exterior walls allow for ingress and egress but introduce security challenges. Building operators work to provide the systems and procedures necessary for limiting admission to those who legitimately belong, and to do so without unreasonably inconveniencing those persons. Those who do not belong need to be denied entrance, but the task is complicated by the inability to recognize such persons without imposing time-consuming screening on all persons attempting entry. Systems that control ingress must not adversely affect the safe egress of building occupants as required by NFPA *101*®, *Life Safety Code*®.

The 2015 edition of NFPA *101* (www.nfpa.org/101), released just prior to the publication of this column, includes new provisions to help assure safe occupant egress where security access turnstiles are used. The turnstiles are positioned in a building lobby, for example, to prevent unauthorized access to the occupied areas of the floor. Persons with proper credentials, typically in the form of electronic cards, signal the turnstile panels to retract, allowing passage. Additional required features work together to assure that the turnstile openings can be reliably used for egress travel without occupants having to provide credentials.

Exhibit 1 depicts security access turnstiles installed across ingress and egress paths. Note the small green lights on the stanchions for the two right lanes indicating that the lanes will permit egress under normal day-to-day use as an occupant from within the secure area of the floor approaches. In such mode, the glass barrier is permitted to close off the opening as soon as any occupant has moved to the non-secure building area (i.e., lobby) outside the turnstile barricade. Similarly, the red light associated with the left lane indicates that the lane is in operation for ingress as is further emphasized by the presence of the floor mat for cleaning shoe soles as occupants enter the building. In such mode, the glass barrier is permitted to close off the opening as soon as any occupant has moved to the secure building area inside the turnstile barricade. Under each of numerous specified conditions, the glass barriers

must automatically swing to the unobstructed open position. None of the conditions requiring actuation of the barrier permits the barrier to remain in the open position for less than 30 seconds; actuation by automatic sprinkler system water flow or fire detection requires the barrier to remain in the open position until the fire protective signaling system is reset.

NFPA 101 regulates egress in significant ways but does not require ingress. All building doors could be locked from the outside and the building could be made code-compliant. Yet, traditional locks that are locked from the outside are also locked from the inside. NFPA 101 permits the use of three forms of door locking hardware that allow for safe egress while denying access to unauthorized persons:

***Exhibit 1*** *Security access turnstiles viewed from side providing egress. (Photo courtesy of U.S. General Services Administration)*

**Electrically controlled egress door assemblies.** The provisions for electrically controlled egress door assemblies are positioned in NFPA *101* along with the material on traditional door locks and latches, and not within the material applicable to the special locking arrangements for access-control or delayed-egress systems. The electrically controlled door assemblies typically take the form of a door leaf that is held locked to its frame via an electromagnet. Authorities having jurisdiction, in enforcing the provisions of earlier editions of the *Code*, often required any door assembly with an electromagnetic lock to comply with one of the sets of provisions

for special locking arrangements, regardless of how the lock was operated. The text applicable to electrically controlled egress door assemblies has the effect of equating the electrically controlled lock to a traditional, mechanically latched or locked door.

***Exhibit 2*** *An electrically controlled egress door assembly viewed from side providing egress.*

Exhibit 2 depicts an electrically controlled egress door assembly installed across an egress path, as viewed from the side providing egress. The door is held in its locked position by an electromagnet. Entry from the opposite side is gained by a card reader. The door can be opened from the egress side via a lock/latch release, installed on the door leaf, that directly removes power from the electromagnet. The occupant sees the unlocking process as being no different than that performed for a mechanically released latch, but the locking and unlocking mechanisms are electronic.

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**Access-controlled egress door assemblies.** The door is held in its locked position by an electromagnet. Entry from the exterior, if it is to be permitted, is typically gained by a card reader. The door can be opened from the interior by pushing on the door leaf as a motion detector senses an approaching occupant and electrically unlocks the door. Should the unlocking mechanism fail, a PUSH TO EXIT button, located to the side of the door opening, overrides the lock so as to provide a redundant unlocking means. Additional required building system and hardware features work together to assure that the access-controlled egress door assembly does not compromise life safety.

***Exhibit 3*** *Non-egress side of access-controlled door assembly.*

Exhibit 3 shows a glass door located across a hotel guest floor corridor. The door is held locked by an electromagnet and requires either a magnetic card to be read or a code to be punched into the key pad to unlock the door. The door is not required for egress for the occupants of the guest rooms in that portion of the corridor.

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Exhibit 4 shows the same door depicted in Exhibit 3 but from the other side. The door serves as egress for the occupants of the guest rooms in that portion of the corridor. The door is equipped with access-controlled hardware. The motion sensor mounted at the ceiling unlocks the door upon occupant proximity. The PUSH TO EXIT button mounted on the wall serves as a backup should the motion sensor fail.

***Exhibit 4*** *Egress side of access -controlled door assembly.*

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**Delayed-egress locking systems.** The door is locked from the exterior and interior, typically by an electric strike. An interior push pad initiates the unlocking process. As the hardware name implies, there is a delay before the door can be opened. After 15 seconds, the push pad is again depressed so as to open the door. Additional required building system and hardware features work together to assure that the delayed-egress locking system does not compromise life safety.

Exhibit 5 shows delayed-egress locking hardware and the sign required for doors that swing in the direction of egress travel.

***Exhibit 5*** *Delayed-egress locking hardware.*

The above examples show that security can be provided in concert with NFPA *101* compliance.

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