

De-Coding Access-Controlled Egress Doors

The 2006 and 2009 editions of NFPA 101 add two other important clarifications as well. Item (7) in section 7.2.1.6.2 states:

“The activation of manual fire alarm boxes that activate the building fire protective signaling system specified in 7.2.1.6.2(6) shall not be required to unlock the doors.”

The other clarification is found in section 7.9.1.1, which states that new access-controlled egress doors are required to have emergency lighting.

When an egress door is equipped with an electromagnetic lock, it must comply with the code requirements for Access-Controlled Egress Doors. Electromagnetic locks are basically a magnet mounted on the door frame and a steel armature mounted on the door. When the magnet is energized, it bonds to the armature and locks the door. When power is cut to the magnet, the door is unlocked.

Unlike most mechanical locksets which normally allow free egress, an electromagnetic lock will not allow egress unless the required release devices are installed on the egress side.

Requirements of NFPA 101® The Life Safety Code® and NFPA 5000™ Building Construction and Safety Code™: The 2003 editions of NFPA 101®, The Life Safety Code® (Section 7.2.1.6.2), and NFPA 5000™ Building Construction and Safety Code™ (Section 11.2.1.6.2) state the following requirements for access-controlled egress doors:

- Access-controlled egress doors must be permitted by the applicable occupancy chapter, and
- One of the following must be provided:
 - a sensor on the egress side which unlocks the door upon detection of an occupant approaching the door, or
 - listed panic or fire exit hardware that, when operated, unlocks the door, and
- The door shall unlock upon loss of power to the locking device, and
- A manual release device (push button) shall be provided to unlock the door, and shall be located 40-48 inches above the floor, and within 5 feet of the door. The manual release device shall be equipped with signage - "Push to Exit", and shall interrupt power to the lock, independent of the access-control system. Door shall remain unlocked for at least 30 seconds, and
- If the building is equipped with a fire protective signaling system, automatic sprinkler system, or fire detection system, actuation of such shall unlock the door, and the door shall remain unlocked until the system is manually reset.

Note: all of the above requirements must be met

The 2003 edition of NFPA 101 was the first to include the language regarding a panic device with an integral switch being used as a release device for an access-controlled egress door. The 2006 edition removed that language, and reverted back to the previous requirement for a sensor to detect an occupant approaching the door which unlocks the door in the direction of egress. At first glance it would appear that a panic device with a switch is not acceptable for releasing this type of lock. However, after a long discussion with NFPA staff and some time spent reading the 2006 Life Safety Code Handbook, it appears that NFPA has clarified this section of the code. A door equipped with an electromagnetic lock and a door-mounted release such as a panic device or lockset with a request-to-exit switch is not considered an access-controlled egress door and is not required to meet this section of the code. The 2009 edition maintained the same language regarding access-controlled egress doors.

Keep in mind that the AHJ may enforce more stringent requirements.

The 2006 Life Safety Code Handbook states, “The special locking arrangements described in 7.2.1.6 include delayed-egress locks and access-controlled egress doors”. Each of these terms has a specific, but limited, meaning for purposes of applying the Code. For example, a building operator installs a magnetic lock on an outside door and provides a card reader outside the building that releases the door lock, so that only authorized persons are allowed entry to the building.

Further, a lever handle is mounted on the inside surface of the door and has an integral switch that releases the magnetic lock whenever a building occupant operates the lever. The building operator refers to this system as an access-controlled egress door, but it is not the access-controlled egress door addressed in 7.2.1.6.2, and it is not subject to those requirements. Rather, the door-locking system described is a normal door in compliance with 7.2.1.5.1, 7.2.1.5.2, and 7.2.1.5.9. The concept is further explained by the third sentence of A.7.2.1.5.9 and A.7.2.1.6.2, both of which are new to the 2006 edition of the Code.”

Paragraph A.7.2.1.5.9 states:

“...It is also within the intent of this requirement that switches integral to traditional door knobs, lever handles, or bars, and that interrupt the power supply to an electromagnetic lock, be permitted, provided that they are affixed to the door leaf...”

Paragraph A7.2.1.6.2 states:

“It is not the intent to require doors that restrict access but comply with 7.2.1.5.9 to comply with the access-controlled egress door provisions of 7.2.1.6.2.”

Table 1: Occupancies Permitting Access-Controlled Egress Doors - NFPA 101 & NFPA 5000, 2003, 2006 & 2009 Editions

Occupancy	Condition
Assembly	Access-controlled egress doors are acceptable, but doors shall not be locked from the egress side when the assembly occupancy is occupied.
Educational, Day Care, Health Care, Ambulatory Health Care, Hotels and Dormitories, Apartment Buildings, Residential Board and Care, Industrial, Storage	No restrictions
Mercantile	Access-controlled egress doors are acceptable in buildings protected throughout by an approved, supervised fire detection or sprinkler system.

Access-controlled egress doors are not mentioned in the following occupancies: Detention & Correctional, Lodging & Rooming Houses.

Notable differences in other codes:

The other codes researched for this article have very similar requirements to NFPA 101® and NFPA 5000™, but the locations where access-controlled egress doors may be used are more restrictive:

The ICC International Building Code® (section 1008.1.3.4) and the BOCA National Building Code (section 1017.4.5) restrict the location of access-controlled egress doors to entrance doors and tenant entrance doors, in Use Groups A (Assembly), B (Business), E (Educational), M (Mercantile), and R-1 and R-2 (Residential). These codes do not contain specific language allowing the use of a panic device to unlock the lock instead of a sensor. The language in these codes clarifies that “ready access” must be provided to the push button. The use of a glass-break type button would not be acceptable. An additional requirement is included in the IBC and BOCA: Entrance doors in buildings with an occupancy in Use Group A, B, E, or M shall not be secured from the egress side during periods that the building is open to the general public.”

The 2009 edition of the IBC introduced requirements specifically for access-controlled egress doors that have separate operating hardware. Paragraph 1008.1.9.8 permits egress doors in A, B, E, M, R-1, or

R-2 occupancies not required to have panic devices to have electromagnetic locks in addition to listed hardware that has a built-in switch and meets the following requirements:

- the operation of the listed hardware is simple and obvious, and
- the listed hardware can be operated no matter the lighting conditions, and
- when the listed hardware is operated, the electromagnetic lock releases, unlocking the door, and
- loss of power to the listed hardware automatically releases the electromagnetic lock, unlocking the door.

The ICBO Uniform Building Code™ does not contain any reference to “Access-Controlled Egress Doors” or specific requirements for doors equipped with electromagnetic locks.

The SBCCI Standard Building Code (section 1012.7) restricts the location of access-controlled egress doors to entrance doors and tenant entrance doors in Groups B (Business), M (Mercantile), R1 and R2 (Residential). This code allows alternatives to a motion sensor, such as a panic device with a switch which unlocks the lock: “An approved listed releasing sensor/device, either mechanical or electrical, shall be provided on the egress side arranged to detect an occupant attempting to gain egress. The doors shall be arranged to unlock by a signal from or loss of power to the releasing sensor/device.” A push button is required in addition to the sensor or mechanical release device, and the code states that the button is for “emergency unlock purposes only”. The SBC includes language stating that, “Entrance doors in Group B or M shall not be secured from the egress side during periods that the building is open to the general public.” It also states that “Entrance doors in buildings having a mechanical means of egress in conjunction with an electric strike shall be latched when not energized.”

What about battery backup?

Similar to the code requirements for delayed egress, most of the codes are unclear about whether battery backup can be used with access-controlled egress doors. Only the SBC has specific language regarding standby power: “Independent standby power, if provided, is acceptable on doors having immediate egress upon activation with a listed releasing sensor/device and, if provided, tie in with the supervised automatic smoke/fire detection or automatic sprinkler system as described in 1012.6.1, Exception 1.” The section referenced in the SBC is the paragraph under Special Locking Arrangements which describes the use of standby power for delayed egress hardware. The other codes all state that “loss of power” to the lock or sensor must unlock the door. As with delayed egress hardware, the grey area lies in the definition of “power”. If battery back-up is desired and a code other than the SBC is being enforced, the AHJ should be consulted.

To understand and follow the code requirements for access-controlled egress doors, you must consult the appropriate edition of the code that is being enforced for the project in question. The following codes were researched for this article. For more information, determine the code that is being enforced and refer to the appropriate edition of that code.

- International Building Code® (IBC) – 2003, 2006, 2009
- BOCA National Building Code (BOCA) - 1999
- NFPA 101® Life Safety Code® (NFPA 101®) – 2003, 2006, 2009
- Standard Building Code (SBC) - 1999
- NFPA 5000™ Building Construction & Safety Code (NFPA 5000™) – 2003, 2006, 2009
- Uniform Building Code™ (UBC) – 1997



Push Button 5200

Note: All of the codes which contain requirements for access-controlled egress doors require a manual release device in addition to the sensor, to act as an emergency override. The manual release device is a push button, but not just any push button. The codes require the operation of this device to result in direct interruption of the power to the lock - independent of the access control system electronics - and the doors must remain unlocked for a minimum of 30 seconds. The button must be clearly identified with signage and must be readily accessible. A push button which contains a pneumatic delay to unlock the electromagnetic lock for 30 seconds would meet the code requirements. This type of switch does not allow relocking of the electromagnetic lock.